DOCUMENT RESUME

ED 236 185 TM 830 690

AUTHOR	Nyberg, V. R.; Clarke, S. C. T.
TITLE	School Subjects Attitude Scales. Administrator's Manual: A Manual for Administration, Scoring and Interpretation.
INSTITUTION	Alberta Dept. of Education, Edmonton. Planning Services Branch.
PUB DATE	Jul 83
NOTE	161p.; For related document, see TM 830 689.
PUB TYPE	Tests/Evaluation Instruments (160) -- Statistical Data (110) -- Guides - Non-Classroom Use (055)
EDRS PRICE	MF01/PC07 Plus Postage.
DESCRIPTORS	*Attitude Measures; Elementary Secondary Education; Foreign Countries; *Rating Scales; *School Attitudes; Scoring; State Norms; Student Attitudes; Test Construction; Testing; Test Interpretation; Test Manuals; *Test Norms
IDENTIFIERS	Alberta; *School Subjects Attitude Scales

ABSTRACT

The School Subjects Attitude Scales were developed to measure student attitudes toward school subjects. It is intended for use in grades 5-12. Reliability estimates were sufficiently high to warrant using the Scales for responses of groups, but not with individuals. Various criteria confirmed the scales' validity. Large groups of public school students in Alberta, Canada, in grades 5, 8, and 11 were tested at the beginning, middle, and end of each school semester to establish norms in reading (literature), language (composition), English, spelling, art, drama, French, guidance, health, home economics, industrial arts, mathematics, music, physical education, science, biology, chemistry, physics, social studies, and typing. Directions for administering the scales, scoring, and using the norm tables is provided. (HFG)

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School Subjects Attitude Scales

Administrator's Manual

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Alberta
EDUCATION

SCHOOL SUBJECTS ATTITUDE SCALES

ADMINISTRATOR'S MANUAL

A MANUAL FOR ADMINISTRATION, SCORING AND INTERPRETATION

V.R. Nyberg and S.C.T. Clarke

This project was funded by the Planning Services Branch, Alberta Education, through the Edmonton Catholic School Board.

PLANNING SERVICES
ALBERTA EDUCATION

July, 1983

SUBJECTS FOR WHICH NORMS HAVE BEEN PREPARED

This manual gives percentile norms for to the School Subjects Attitude Scales. Norms for the following subjects are presented.

Grades 5 and 6

- Reading (Literature)
- Language (Composition)
- Spelling
- Art
- French
- Health
- Mathematics
- Music
- Physical Education
- Science
- Social Studies

Grades 7 and 8

- Reading (Literature)
- Language (Composition)
- Art
- Drama
- French
- Health
- Home Economics
- Industrial Arts
- Mathematics
- Music
- Physical Education
- Science
- Social Studies

Grade 9

- Reading (Literature)
- Language (Composition)
- Art
- Drama
- French
- Guidance
- Health
- Home Economics
- Industrial Arts
- Mathematics
- Music
- Physical Education
- Science
- Social Studies
- Typing

High School*

- Biology 10
- Biology 20
- Biology 30
- Chemistry 10
- Chemistry 20
- Chemistry 30
- English 10
- English 13
- English 20
- English 23
- English 30
- English 33
- French 10
- French 20
- French 30
- Mathematics 10
- Mathematics 13
- Mathematics 15
- Mathematics 20
- Mathematics 23
- Mathematics 25
- Mathematics 30
- Mathematics 31
- Mathematics 33
- Physical Education 10
- Physical Education 20
- Physical Education 30
- Physics 10
- Physics 20
- Physics 30
- Science 11
- Social Studies 10
- Social Studies 20
- Social Studies 30
- Typewriting 10

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* Grade 10 subjects have numbers ranging from 10-19, Grade 11 from 20-29, and Grade 12 courses from 30-39.

ACKNOWLEDGMENTS

Norming of the School Subjects Attitude Scales (SSAS) involved the co-operation and assistance of thousands of people. First of all, the Deputy Minister of Education set the project in motion by contacting superintendents. About fifty superintendents, after discussion with about 125 school principals gave permission for the scales to be administered. The principals, in turn, set up the testing procedures (or delegated the task to a member of staff) and then instructed the teachers who actually administered the test. The students, perhaps thirty thousand of them, assisted by recording their attitudes on about a quarter of a million answer sheets. In addition, valuable assistance was provided by officials in Alberta Education Central Office and in the School Book Branch. The Edmonton Catholic School System carried out some of the essential administrative details. The required computing was planned and carried out by Psican consulting Ltd. and the word processing by the office staff of the Department of Educational Psychology.

Special mention must be made of Joel Bishop, who somehow managed the packaging and then the arduous task of sorting the sheets for machine processing.

The invaluable assistance of all of these people is acknowledged gratefully, respectfully, and with appreciation.

V. R. Nyberg
S. C. T. Clarke
June, 1983.

PARTICIPATING SCHOOLS

The schools named in the list below administered the School Subjects Attitude Scales to at least one class of students.

Edmonton Schools

Abbot Elem.
Afton Elem.
Allendale Elem.-Jr. High
Austin O'Brien High
Archbishop MacDonald
Bonnie Doon Comp. High
Braemar Elem.
Brookside Elem.
Cardinal Leger Jr. High
Elizabeth Seton Elem.-Jr. High
Father Lacombe Elem.
Glengary Elem.
Grovenor Elem.
Inglewood Elem.
Jasper Place Comp. High
Kildare Elem.
Lawton Jr. High
Lendrum Elem.
Londonderry Jr. High
Louis St. Laurent High
M.E. LaZerte Comp. High
Malmo Elem.
McNally Comp. High
Rideau Park Elem.
St. Bede Elem.
St. Bonaventure Elem.
St. Francis of Assisi Elem.-Jr. High
St. Francis Xavier High
St. Matthew Elem.
St. Thomas Aquinas
Stratford Jr. High
Strathcona Comp. High

Calgary Schools

Albert Park
Belfast Elem.
Bowness High
Central Memorial High
Colonel MacLeod
Dr. J.K. Mulloy
Earl Grey
Elboya Elem.-Jr.High
Fairview
Guy Weadick Elem.
Haysboro
Holy Trinity
Kingsland
Louis Riel
Patrick Airlie
Queen Elizabeth High
Queensland Downs
Renfrew
Sarcee
Sir John A. MacDonald
St. Andrew
St. Francis High
St. Helena
St. Paul
St. Philip
St. Stephen
Western Canada High
Westgate
William Aberhart High

Small Urban and Non Urban Schools

Annie L. Gaetz (Red Deer)
Archbishop Jordan High (Sherwood Park)
Ardrossan Sr. High
Arrowood
Assumption (Lethbridge)
Athabasca Elem.
Blessed Sacrament (Wainwright)
Bon Accord
Bonnyville Centralized High
Camrose Comp. High
Canyon (Pincher Creek)
Cardston Elem.
Conrich
Delnorte (Innisfail)
Devon Jr. Sr. High
Dewberry
Dr. Elliott (Linden)
Eastbrook Elem. (Brooks)
E.W. Pratt (High Prairie)
F.G. Miller Jr. Sr. High (Elk Point)
Fort Saskatchewan Sr. High
Fort McMurray Comp. High
G.H. Dawe Community Centre (Red Deer)
Georges H. Primeau (Morinville)
Gilbert Paterson (Lethbridge)
Grassland
Griffiths-Scott (Millet)
Hazel Cameron Elem.
Hillside Community (Grande Prairie)
H.T. Coutts (Claresholm)
Iron River
J.C. Charyk High (Hanna)
J.T. Foster (Nanton)
Kathyrn
Leduc Sr. High
Legal
Manning Elem.
Medicine Hat High
Montrose Jr. High (Grande Prairie)
Mundare
Muriel Clayton Elem. (Airdrie)
New Sarepta High
Nicholas Sheran Community (Lethbridge)
Niton Central
Noble Central (Nobleford)
Paul Kane High (St. Albert)
Peace River High
Peter Svarich (Red Deer)

Red Deer Lake
Redwater
Rosary (Manning)
Salisbury Comp. High (Sherwood Park)
Seba Beach
Sheldon Coates Elem. (Grande Cache)
Sir Alexander MacKenzie (St. Albert)
St. Dominics (Cold Lake)
St. Martins (Vegreville)
St. Marys (Beaverlodge)
Stettler Jr. High
Strome
Sturgeon Comp. High (Namao)
Sundre
Sunnyside (Lethbridge)
Taber Jr. High
Vauxhall Elem.
Vauxhall Jr. Sr. High
Vincent Massey (Medicine Hat)
Wainwright Elem.
Westlock Jr. High
Westlock Sr. High
Westmount Elem. (Strathmore)
Wetaskiwin Comp. High
Whitecourt Central
Winterburn
Woodhaven Jr. High (Spruce Grove)
W.R. Myers High (Taber)

Special Notes

Answer Sheets

Machine scorable answer sheets (NCS) for the School Subjects Attitude Scales are available from:

School Book Branch
Public Works Building
10410 - 121 Street
Edmonton, Alberta
T5N 1L2

As of June, 1983, the answer sheets are listed under the heading MISCELLANEOUS in the School Book Branch Price List and Order Form.

Scoring

Instructions for obtaining machine scoring services, and for hand scoring, are given on pages 19-20.

FOREWORD

The School Subjects Attitude Scales (SSAS), which measures attitudes towards school subjects, is intended for use in grade five to grade twelve. The instrument was developed in response to a perceived need connected primarily with changes in curricula. While achievement levels are usually checked when teaching methods or curricula are revised, student attitudes typically are not measured. This is largely because appropriate instruments have not been available. Alberta Education promoted development of the School Subjects Attitude Scales to fill the need for such an instrument.

Construction of the norms set forth in this manual represents the final phase in the development of the School Subjects Attitude Scales. Construction of the scales was based on responses by grade 5, grade 8, and to a lesser extent, grade 11 students in Alberta. The norms, based as they are on representative samples of Alberta classes, are applicable to other groups only to the extent that their educational background resembles that of Alberta students. Norms for subjects in eight grades are presented in this manual. This does not imply that the SSAS is inappropriate for assessing attitudes in other subjects. At present there are no plans to construct norms in other subjects, however, school systems could easily develop their own.

V.R. Nyberg
S.C.T. Clarke

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INTRODUCTION

An attitude is an aspect of personality, associated with how a person will probably react to a certain stimulus. Noll, Scannell, and Craig (1979, p.360) say this of attitudes:

> They are closely associated with feelings and emotions and are a large factor in determining our reactions and behavior. An attitude may be thought of as a response pattern or a tendency to think or act in a particular way under a given set of circumstances.

Students' attitudes towards school subjects probably have an effect on motivation, and whether or not certain courses or programs will be taken. A relationship between attitude and achievement might also exist, although none was found in the validation study (see page 7). Attitudes and appreciations are listed in the programs of studies for the elementary grades (1-6) (Alberta Education, 1982, p. V), for the junior high school grades (7-8) (Alberta Education, 1978, p. 1), and for the senior high school grades (10-12) (Alberta Education, 1978b, p. 1). The statement, under the heading Goals of Schooling, that is given in the senior high school program of studies that refers directly to attitudes towards school subjects is as follows:

> ...Acquire basic knowledge and develop skills and attitudes in mathematics, the practical and fine arts, the sciences, and the social studies (including history and geography), with appropriate local, national, and international emphasis in each. (Alberta Education, 1978b).

The identical statement appears in the junior high school guide (Alberta Education, 1978a), and a similar statement appears in the guide for elementary grades (Alberta Education, 1982).

Indirect reference to attitudes towards school subjects is given in the goal:

> Acquire knowledge and develop skills, attitudes, and habits required to respond to the opportunities and expectations of the world of work (Alberta Education, 1978b, p. 2).

The identical goal is stated also in the elementary guide and the junior high school guide.

In view of the possible effects of attitudes on schooling, and the mandate to foster positive attitudes given by Alberta Education, it seems reasonable to monitor attitudes towards school subjects. An instrument for this purpose will enable educators to determine effects of attitudes and assist in the task of devising methods of making students' attitudes more positive.

Instruments for determining attitudes are usually of a self report, questionnaire type. Typically, a Likert scale is employed, resulting in a single score. Most attitude scales have two limitations that must be considered. The first is that computation of a single score is based on the assumption that an attitude has only one dimension. The second limitation is stated well by Thorndike and Hagen (1969, p. 415).

> The big qualification about attitude scales is that they operate purely on a verbal level. The individual doesn't do anything to back up his stated attitude. The scales deal with verbalized attitudes rather than actions. Of course, an attitude scale is obviously fakable. If we recognize that it represents the verbalized attitude that the individual is willing to express to us and work within that limitation, an attitude scale appears to be a useful research tool or tool for experimental evaluation of educational objectives lying outside the domain of knowledges and skills.

The School Subjects Attitude Scales (SSAS) was developed so as to remove the first limitation. Three scores, based on factor analysis, are computed, and each of these scores represents a single dimension. The second limitation remains, and must be borne in mind by users of the scales.

The SSAS is an instrument for measuring in the affective domain, an area that has been largely neglected in education. Its value will depend to a large extent upon how important students' attitudes are in shaping their educational development, and the importance we assign to attitudes independent of their relationship to other areas of development.

HISTORICAL PERSPECTIVE

The SSAS instrument was developed during 1978 and 1979 by V. R. Nyberg and S. C. T. Clarke of the University of Alberta. The project was recommended by the Minister's Advisory Committee on School Achievement and was funded by Planning and Research, Alberta Education.

The purpose in developing the scales was to make available an instrument for measuring students' attitudes toward school subjects. It was recognized that several goals of education involve the affective domain. While affective goals are important aspects of schooling, no commercially prepared instruments for measuring students' attitudes toward school subjects were available. It was therefore decided that the feasibility of developing an instrument be explored.

Stages of Development

First, approximately 100 bipolar word pairs (usually adjectives) which might be applied to school subjects were identified. Pairs which seemed least applicable, and pairs not understood by students in one-to-one tryouts, were eliminated. At this stage 46 pairs remained. In stage two, the 46 word pairs were administered to 748 students (Grades 5 and 8) and the results were factor analyzed. Three factors, evaluative, usefulness and difficulty, emerged. The third stage of development confirmed with another group of students the stability of the three factors, and formed the basis for reducing the number of word pairs to 24. The fourth stage was undertaken to determine reliability and validity. A final stage again determined reliability after revising each of the three scales so that it consisted of eight word pairs, and adding brief meanings for difficult words. A more complete description of the development of scales is given in an article by Nyberg and Clarke (1982)*.

Throughout the preparation of the scales, seven desirable features guided the work. The scales should:

1. be readily understood by users (teachers and students);
2. insofar as possible, not be subject to faking;
3. yield more than one score;

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* The complete article is reproduced in Appendix I of this manual.

4. produce valid and reliable results;
5. be short enough so that several school subjects could be rated in a normal class period;
6. be suitable for all school subjects at widely different grade levels;
7. have capability for hand scoring as well as machine scoring.

The Semantic Differential technique was adopted in order to secure an optimum blend of these desired qualities. This technique, described by Osgood, Suci, and Tannenbaum (1957), was devised for measurement of the meaning of concepts. The meaning that a person associates with a given concept is determined through his/her responses on a five or seven point rating scale between several sets of bipolar adjectives.

In the many studies involving the Semantic Differential technique, three factors are commonly found; evaluative, associated with adjectives such as good-bad, and pleasant-unpleasant; potency, involved with pairs such as strong-weak, and light-heavy; and activity, containing pairs such as fast-slow, and dull-exciting. These three dimensions result from factor analysis.

The technique was adapted to suit the task of developing the School Subjects Attitude Scales. While meaning as such was not under investigation, the attitudes sought were in this general area. The factors that emerged were somewhat similar to the three that are ordinarily extracted. They were labelled "evaluation", "usefulness" and "difficulty".

The evaluative factor is very similar to the factor defined by Osgood et al, however, an inspection of the bipolar adjectives indicates that some of them are those typically associated with the activity dimension. This is to be expected, in view of the youth of the respondents. Young people seem to equate, to some extent, evaluation and activity; that is, if it is liked, it is active, and vice versa. The usefulness factor bears some resemblance to the potency factor. The difficulty factor is essentially unique, but is a logical factor to emerge when school subjects serve as the stimuli under consideration.

DESCRIPTION OF THE INSTRUMENT

General Description

The School Subjects Attitude Scales are intended for use in Grade 5 to Grade 12. During the developmental stages, the instrument was administered to Grades 5, 8 and 11 in Alberta schools. Reliabilities tended to be higher at the upper grade levels, therefore it was felt that the scales could be used through Grade 12 without problems developing. It is likely that the scales would be usable in post-secondary institutions. Use of the scales below the fifth grade is not recommended for regular, heterogeneous classes. It was noted that weak students at the fifth grade, perhaps five percent of them, completed ratings that could not be used. It was decided, therefore, not to administer the tests below Grade 5. Norms for virtually all subjects were developed for grades 5-9, and for all except the vocational-technical subjects at the high school level. Other high school subjects were omitted in cases where the total enrolment was low. Generally speaking, this meant any subject with an enrolment of less than 4,000 students. There were a few exceptions, such as Art 10, Personal Psych. 20, and Religious Studies 15, where enrolments exceeded that number.

The instrument contains twenty-four descriptive word pairs. The first eight define the evaluation factor, the next eight define the usefulness factor, and the last eight the difficulty factor. The positive end of each word pair appears an equal number of times on the left and right sides of the five response positions.

Brief definitions of some of the descriptors are given on the answer sheet. These are intended, by and large, to assist Grade five and Grade six students. A definition is never given for more than one of the bipolar pairs. It was found that when one extreme was understood, the other extreme became clear.

Five response positions were used, and verbal guideposts were provided. Seven positions might have produced more reliable results for high school grades, but were found to be confusing for younger students. Five positions seemed to be at least satisfactory at all age levels tested.

Reliability

Reliability estimates (test-retest, with a one week interval) were computed during the development of the School Subjects Attitude Scales. The coefficients varied among the three scales, among the subjects, and among the grades (Nyberg, V.R. and Clarke, S.C.T., 1982). Values of the coefficients ranged from a low of .61 (Grade 5, Social Studies, Difficulty Scale) to a high of .86 (Grade 11, Mathematics, Difficulty Scale). Most of the reliability estimates were in the .700 to .799 range. These were judged to be sufficient to warrant using the SSAS for responses of groups.

It must be noted that the reliability estimates computed during the development phase of the scales do not apply directly to the norming phase. The earlier values were based on responses of individual students; that is, the reliability of student scores was determined. The norming phase dealt with means of classes. Since class means are much more stable than individual scores, it was expected that the reliability coefficients would also be higher. In order to check on this expectation, a few subjects at different grade levels were selected for study. Mean responses for each set of bipolar adjectives were calculated and alpha coefficients based on these means were found. These coefficients are, then, reliability estimates of class means. The resulting values were, indeed, quite high. Details are given in Appendix III.

Validity

Considerable effort and care were devoted to determining validity. Teacher opinion was one criterion. Teachers were asked to select one-quarter of the students in a classroom with the most positive attitude toward a school subject (e.g. social studies) and the one-quarter with the least positive attitude. Student ratings on the subject for evaluation, usefulness, and difficulty were consistent with the teachers' opinion. Student preferences provided a second criterion. Students were asked to select and rate the most liked subject, then select and rate the one least liked. Similarly, they selected and rated the most useful and least useful, and the most difficult and least difficult subjects. The results showed that students' choices coincided with the ratings they provided. A third criterion was type of school. One "academic" school was found. Student ratings of social studies in this school were more positive than ratings made by other students, but results for science were not so clear. A fourth criterion was cultural differences, which at the Grade 5 level were small but by the Grade 8 level were larger and were in the expected direction. A final criterion was sex differences, which again were in the expected directions (e.g. older girls have less favourable attitudes toward science than do older boys). Again, for further detail the reader is referred to the article cited.

It was found that scores on standardized achievement tests, and on intelligence tests, were not correlated with attitude scale scores.

Uses and Limitations

The scales were developed as group (classroom) measures of students' attitudes toward school subjects. They were not intended for use with individuals.

The use of the scales in curriculum development is obvious. When a new program or teaching procedure is developed, changes in achievement level is usually monitored closely. Sometimes, when there is an improvement in achievement level, the charge is made that the students have come to dislike the subject because of the pressure to achieve. No instrument was readily available to check on attitudes so the charge could not be challenged. The School Subjects Attitude Scales makes it possible to measure any changes in attitude in a class. A simple test-retest procedure on an experimental group and a control group could be used. Alternatively, in single-group evaluation designs changes in percentile rank for the group (using the appropriate beginning, mid-year and end-of-year norms) could be used in identifying shifts in attitude.

Many other uses are possible, such as differences in attitudes related to class size, socio-economic status of parents, geographical area (including rural-urban comparisons), and ability level.

Faking remains a problem and must be borne in mind when the attitude scales are being considered for use. Students may tend to give socially accepted responses rather than true responses if they feel that they may gain by such faking (or lose by telling the truth). Anonymity, computing group results only, administration by "neutral" persons, and a minimum of monitoring while school subjects are being rated can all reduce faking.

Finally, the matter of recommended use for groups rather than individual students should be mentioned. While it is possible that individual scores are of value, this use of the scales has not been investigated. Common sense suggests that the reliability of the scales is not high enough for valid interpretations to be made. Also, if the students are aware that their scores will be scrutinized, the problem of faking becomes more serious.

OUTLINE OF THE NORMING PROCEDURES

Initial Decisions

At the outset of the norming project, it was necessary to make several arbitrary decisions. First, norms for classes and not individual students would be constructed. This meant, also, that students' names would not be given on the answer sheets. This procedure would minimize motivation for faking, as the students would perceive that they had nothing to gain or lose by recording true feelings. Use of individual scores would introduce many extraneous and detrimental factors. The scores would be affected by who was giving the test, who might scrutinize the results, and to what extent a student might be held accountable for his/her responses. Also, if scores were associated with individual students, misuse of the results would be facilitated. Teachers' treatment of students might be influenced by students' scores.

A second decision was made with respect to class size. For inclusion in the norming sample, ten students or more had to be tested. This meant that no classes of fewer than ten students were selected, and that any class in the sample that submitted fewer than ten answer sheets, for whatever reason, was not included in the norming project. This matter is discussed further under the heading "Sampling Procedure".

The third decision was that classes would be tested as they existed. This meant, for example, that students absent on the date the scale was administered were not asked to complete the scales later. Also, if a Biology 10 class (a Grade 10 course) had some Grade 11 or Grade 12 students enroled, no adjustments were made. This procedure was employed to facilitate later use of the test; that is, a school would test classes as they were, without special exclusions or other adjustments.

Another decision was based on the assumption that attitudes towards school subjects change during the course of instruction. The result was that norms would be developed for three distinct times - beginning of year, mid-semester or mid year, and end of year. The procedure is described further under the heading Computation of Norms.

Sampling Procedures

The norms for the School Subjects Attitude Scales were designed so as to apply to mean scores for classes, rather than to individuals. That is to say, test users would be able to ascertain the percentile rank of the mean scores for a certain class in the three attitude areas being assessed. Norms applicable to individual students were not produced.

Choosing a sample of classes, ideally, would involve numbering all of the classes in all subjects being tested in Grades 5 to 12, and then making selections based on random digit tables. This procedure, however, would have placed enormous clerical tasks in the schools, because lists of classes are not compiled by Alberta Education. Instead, representative samples of schools were chosen, and all school subjects on the list to be normed that were taught in those schools were scaled. It was intended that the sample of classes would result in about seven percent of the students completing the scales.

Some exclusions were made at the outset. No private schools were included in the sample, nor were schools operated in institutions such as hospitals or jails. All special education classes were excluded, but special education students who were receiving instruction in regular classes were included in the testing.

In most cases, absentees were not included; that is, it was not suggested that students absent at the time of testing be given the test later. Some schools did, however, make an effort to test at a later time the students who were absent on the original testing date.

Finally, as was mentioned earlier, classes of less than 10 students were not included. This meant that many small schools were omitted. For example, if the enrolment figures for a school showed that no grade from 5 to 12 had ten students or more in any one grade, that school was excluded. Small classes were excluded because the mean scores for their groups would show a greater variation than would classes in larger schools. If small classes were included (there are some "classes" with only one or two students), the low and the high percentile ranks would probably include none of the larger schools. Setting the maximum number of students at 10 would lessen the tendency but not eliminate it entirely.

Stratification was carried out on the basis of degree of urbanization and on the educational level. Three degrees of urbanization were defined. The Large Urban classification included schools in cities of population 400,000 or more; that is to say Edmonton and Calgary public and separate systems. Small Urban schools were those under the jurisdiction of other cities in Alberta, plus schools in Sherwood Park. Non-Urban schools were those operated by jurisdictions other than cities. Centralized schools, located in a city, but operated by a Division or County were placed in this category.

Stratification by level meant that samples were drawn for elementary grades (5 and 6 only), junior high school grades, and senior high school grades. Some schools operated at two or all three levels, therefore a special procedure for selection was devised. First of all, a list of all schools teaching high school was drawn up, and a sample chosen. Any chosen high school that also taught junior high school grades was then placed also in the junior high school sample. Similarly, if Grades 5 and/or 6 were taught, the school was also placed in the elementary sample.

Next a list of schools teaching junior high school grades was constructed, but those that also offered high school grades were now excluded. A random sample was drawn, and any school that offered instruction in Grades 5 and/or 6 was also placed in the elementary sample. To this list was added the schools in the high school sample that also offered junior high school instruction.

Finally, the elementary sample was drawn from a list of elementary schools from which those that offered junior high school or senior high school instruction were excluded. To the list was added the high schools and junior high schools, previously selected, that also offered instruction in Grades 5 and 6.

It was noted earlier that the intention was to test about seven percent of the students. Schools were added to the sample until about the right number of students were involved. The actual number of schools, then, was not pre-determined, but depended on the sizes of the schools selected.

Several schools in the non-urban sample offered instruction at all three levels and a larger proportion operated at two levels. Schools in the large urban sample tended to have classes at one level only, but there were a few exceptions. No schools in the large urban sample offered instruction at all three levels. The small urban sample was more like the large urban than the non-urban sample.

Some of the schools selected were very large in comparison to others. It was noted that the large urban sample for, say, the Calgary Public School system, might consist of as few as two schools. For this reason, a special procedure was adapted when large schools were involved.

Fifty schools, representing all stratifications, having multiple sections of grades or classes were labelled "Designated Large Schools" and special instructions were drawn up for them. At the senior high school level it meant that every second class in a subject would be tested. The principal was asked to number the classes in order of the alphabetical listing of the surnames of the teachers. If there was an odd number of classes, the odd numbered classes, only, would take the test. If there was an even number of classes, the even numbered classes would be tested.

At the junior high school level a similar procedure was used for numbering the classes. All classes, however, were given the test, but different classes dealt with only one of two groups of school subjects. Group 1 subjects were: Literature, Science, Social Studies, Health, and Guidance 9; while Group 2 subjects were: Language, Mathematics, Physical Education, Health, and Guidance 9. Health and Guidance were on both lists because these subjects were offered (as separate subjects) in comparatively few schools. All students rated the options taken from the following list: Music, Art, Drama, Home Economics, Industrial Arts, French, Typewriting 9.

A similar procedure was adopted at the elementary level. The subject grouping was as follows: Group 1 - Literature (Reading), Spelling, Science, Health, Art, Drama; Group 2 - Language (Compositions), Social Studies, Mathematics, Physical Education, Music, French.

For both junior high school and elementary grades it was made clear that subjects for which formal instruction was given, only, were to be rated. That is, if Health in Grade 8 was included in Science, Health was not to be rated. Also, if an elementary school did not offer Drama instruction it was not to be rated.

Administering the Scales

In early May, 1982, principals of the schools in the selected sample were sent a specimen kit of scaling materials. This included a sheet of general information entitled "Overview of the Project", copies of the Principal's Manual, the Teacher's Manual, a list of course code numbers, and if the school was designated as a large school, a manual of special instructions for selecting classes and assigning code numbers. The purpose was twofold: first, to remind the principals that the testing they had agreed to conduct was nearly due; and second, to give them an opportunity to become better acquainted with the study and the various tasks required at each school.

In mid May, the main supply of materials was sent out, with instructions for their return. Most of the materials were mailed, but some were delivered in the larger centres.

The response by the schools was excellent. Of 122 schools contacted, only 9, for various reasons, were excluded by request. Two schools did not take part because the superintendent would not give permission; and in one school most of the teachers refused to co-operate so it was excluded. Six schools asked to be excluded because of heavy involvement in other programs. These nine schools were replaced from the supplementary lists in each category. One school accepted the material but failed to administer or return the supplies. One school administered the scales but the sheets were so damaged in the mails that they were not processed. In all, then, 120 schools administered the scales in the spring of 1982.

In mid September the cycle was begun again. Kits were sent to the principals, followed in a few days by the main bulk of materials. As stated earlier, about 40 percent of the schools were selected for the second administration. There were a few complaints to the effect that "We already did this." but a brief explanation was usually sufficient to cause the administration to proceed. In the second round, testing was conducted in 47 schools.

The first two sessions were for the purpose of establishing end-of-term and beginning-of-term norms. Establishing mid-term norms required special attention, because the high schools operated on a split-term or semester and therefore reached mid-term in November.

Elementary and junior high schools, on the other hand, reached mid-term in early February, since they operated on a full-year basis. A complicating factor was that some high schools offered some of their courses (e.g. English 10) on a full-year basis.

High schools, as a consequence, were asked to administer the scale in their semestered courses in mid-November, and in early February for their full year courses. All of the elementary and junior high schools were asked to administer the scales required for mid-year norms in early February.

The mid-term administration involved 51 schools, but a different group of schools from the 47 tested in September.

For some of the high school subjects the numbers of classes in the samples were deemed inadequate. An additional 17 high schools were contacted, and these schools administered the scales in a few subjects only. A total of 137 schools was actually involved in the norming project.

Computation of Norms

The overall procedure was to test a comparatively large group of students near the end of a school year (June, 1982), then construct norms based on classes rather than individual students. It was assumed that attitudes would change during the course of a semester or school year, therefore, it was necessary to derive norms for different times of the year. It was also assumed that there would be sex differences in attitude scores, therefore measures had to be taken to check on the validity of this assumption and to make allowances for whatever differences might exist. Substantial differences in these areas were subsequently found.

It was decided that norms would be constructed for attitudes held at the end of the year (June), beginning of the year (September) and mid-year (February) or semester (November). Mid-year norms would be compiled for courses that ran for the full school year and mid-semester norms for courses completed in a semester. It was assumed that attitudes at the end of the first semester would be no different from attitudes at the end of the second semester (June). This assumption was not verified, nor was the additional assumption that norms for the middle of each of the two semesters would be the same.

For a certain school subject, testing would be conducted on three separate occasions. As a consequence of the first testing being conducted in June, virtually no student would record attitudes for a particular school subject more than once. A majority would take the test on two separate occasions, but different subjects would be rated. (This is assuming that Science 7, for example, is a different subject from Science 8.)

The general procedure for constructing norms was to compile the results for the June testing, then to consider other norms to be adjustments of the June norms. A simple method of achieving this was adopted. Following the June, 1982, testing of the complete sample, a number of schools were chosen so as to represent about 40 percent of the main sample. Students in these schools were tested in the fall, the beginning of the next term. The differences in attitudes between beginning and end-of-year were determined by calculating means and standard deviations for each school subject for the fall group for all of the students. Scores for students in these same schools were extracted from the spring sample and means and standard deviations computed. As suspected, the attitudes, as reflected by the scores, were different. Generally speaking, attitudes in the fall were more positive than end-of-year attitudes determined in the spring. Adjustments, based on the differences, were made to the spring results, then the fall norms were constructed from these adjusted scores.

An example of the calculations is given below to help explain the adjustment procedures used in developing the fall norms.

For Grade 9 Mathematics, the mean and standard deviation for the Evaluative Scale for June, according to Table 113, page 129, were 25.7 and 4.2 respectively. In the fall, the mean was 25.1 and 4.7 respectively. The fall mean was .6 higher than the spring mean, and the standard deviation was .5 higher; that is, it had increased by a factor of 4.7/4.2=1.12. Accordingly, the June evaluation scores were each multiplied by 1.12, to correct for the change in spread of scores, then each score was adjusted so that the two means would be equal. In this case the June mean was adjusted downward by 3.0 because the adjustment for spread of scores had increased the mean from 25.1 to 28.1. The transformed scores that resulted served as the basis for the fall norms. A similar procedure was used for establishing mid-year and mid-semester norms.

A final operation was completed. All of the scores, for the three test administrations in each subject, were adjusted to represent attitudes at each period of administration. The scores, for each of the periods were then pooled and norms established. For example, the end-of-the-year norms for Science 20 were based on the raw scores recorded for the June testing, plus the beginning-of-the-year test scores, adjusted to June scores, plus the mid semester scores also adjusted to the June scores. Similarly all the scores were adjusted to the beginning-of-the-year, and norms calculated; then all the scores were adjusted to the mid year or mid semester, and norms constructed again.

Sex differences posed a different problem. There was no particular point in constructing norms for each sex in each subject because in only a few subjects, such as Home Economics and Industrial Arts might they be applicable in some of the schools. Instead, norms were based on classes as they existed, and differences between the two sexes were determined by pooling scores for males, then for females. The proportion of males and females enroled in each subject was then determined, and a formula for adjustments drawn up for classes when the mix of males and females deviated from the proportions in the province as a whole. This formula is given on page 25.

For example, the Language, Grade 7 sample was made up of 50 percent girls and 50 percent boys. The mean Evaluative score for the girls was 2.15 higher than the mean for the boys. A certain Grade 7 Language class might have a mean score of 25, in the fall testing, corresponding to a percentile rank of 51. However, if the class consisted of 10 percent girls and 90 percent boys, an adjustment based on the generally less positive attitude of boys toward Language would produce a score with a percentile rank of 60.

With respect to the underlying principle of basing norms in classes as they existed, no account was taken of high school students taking classes at other than their own grade level. For example, a Grade 10 Language class might contain several students registered in Grade 11. These students were not withdrawn from the sample because Grade 10 classes typically include some Grade 11 students, and, on occasion, some Grade 12 students.

A complication arose from the procedures adopted. Apparently a number of high schools register Grade 10 students in French 10 during the first semester, then permit them to register in French 20 in the second semester. The French 20 norms, then, are based to a considerable extent on Grade 10 students, rather than on Grade 11 students. This is complicated further by the fact that the base testing

(June) occurred in the second semester and therefore included a substantial proportion of Grade 10 students.

DIRECTIONS FOR ADMINISTERING THE SCALES

Preparation

A few preparations in advance of the time set for administering the SSAS will reduce the problems that occur in processing. The preparations differ slightly, depending on whether the answer sheets are to be machine scored by Alberta Education, or by commercial scoring service, or hand scored locally.

If the answer sheets are to be machine scored, it is necessary that the students use HB pencils. If the school does not have a supply of these, students should be asked to bring their own. Somewhat softer pencils will serve, but pencils harder than HB should be avoided.

If several senior high school subjects are to be rated, it is necessary for the box entitled SR. HIGH COURSE to be filled in. A copy of one side of the answer sheet is shown on the next page, for ready reference. In Alberta, every high school course has been assigned a four-digit number. The numbers for the courses being rated should be ascertained beforehand by the administrator so that the students can be informed. The list of courses for which norms were developed, and corresponding numbers, are given in Appendix II.

If more than one section of any course is being rated at any grade level, it is necessary to assign numbers to the section (001, 002, etc.) and for the administrator to relay this information to the students. The section number is placed in the box headed SPCL. CODES (Special Codes).

If answer sheets are to be hand scored it is necessary only to keep separate the answer sheets from different sections of a class. For example, if there are three Grade 6 classes, all of them rating Mathematics, it is suggested that the classes be numbered 001, 002, and 003, and that the appropriate number be entered in the SPCL. CODES box. Other boxes may be used as deemed necessary for avoiding confusing groups of completed sheets. For example, it would be easy to mix Grades 7 and 8 Science if grades are not entered by students.

The boxes entitled SUBJECT and SCHOOL should be filled in to enable a verification of the identifying information to be made.

Administrator's Remarks

Before the students commence filling out the answer sheets, some introductory remarks should be made. Students should be told that their views are important, and that very frank responses should be given. It is suggested that the administrator say:

> HOW STUDENTS FEEL ABOUT SCHOOL SUBJECTS IS VERY IMPORTANT, THEREFORE, YOU ARE ASKED TO FILL OUT THE RESPONSE SHEET OR SHEETS THAT HAS BEEN PROVIDED.
>
> THIS IS NOT A TEST. THERE ARE NO RIGHT ANSWERS NOR ANY WRONG ANSWERS. THE IMPORTANT THING IS TO TELL HOW YOU FEEL ABOUT A SCHOOL SUBJECT BY RATING IT.

Next, the administrator should go over, with the students, the instructions given on the reverse side of the answer sheet. Draw particular attention to the fact that students' names are not to be entered on the answer sheets, and that anonymity of the responses is assured.

The administrator should next give the students the code numbers: School Code, Special Codes, Senior High Course codes, as required. Use of these codes is described in the previous section entitled Preparation.

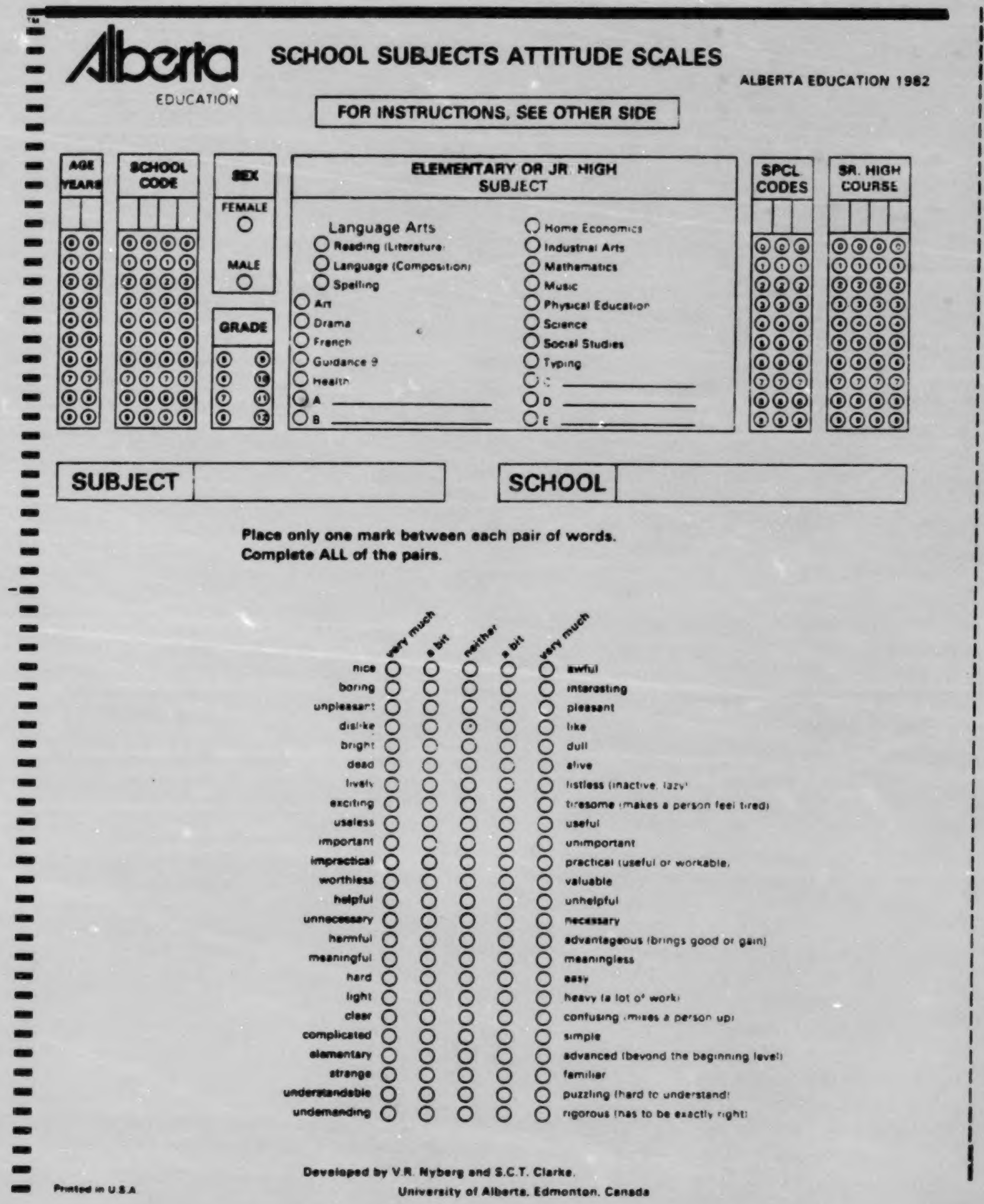
It is desirable to draw to the attention of students in junior grades that the NEITHER rating can mean that the students' feelings are midway between the two extremes or that neither word describes what they feel. Warn students about the two most common faults in rating: 1) filling in two bubbles in one row; 2) failing to record one response between every adjective pair.

Once it is clear that the students understand what they are to do, they should be told to begin.

Time Requirements

There are no time limits for completing the responses, but students usually work quickly. The first administration, counting time for explanations and filling in identifying data, may take twenty minutes. Once students have had experience, a subject can usually be rated in about five minutes.

PHOTOCOPY OF ANSWER SHEET



Alberta
EDUCATION

SCHOOL SUBJECTS ATTITUDE SCALES

ALBERTA EDUCATION 1982

FOR INSTRUCTIONS, SEE OTHER SIDE

AGE YEARS		SCHOOL CODE				SPCL CODES			SR. HIGH COURSE			
⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪
①	①	①	①	①	①	①	①	①	①	①	①	①
②	②	②	②	②	②	②	②	②	②	②	②	②
③	③	③	③	③	③	③	③	③	③	③	③	③
④	④	④	④	④	④	④	④	④	④	④	④	④
⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥	⑥	⑥	⑥	⑥	⑥	⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦	⑦	⑦	⑦	⑦	⑦	⑦	⑦	⑦	⑦
⑧	⑧	⑧	⑧	⑧	⑧	⑧	⑧	⑧	⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨	⑨	⑨	⑨	⑨	⑨	⑨	⑨	⑨	⑨

SEX
FEMALE ○
MALE ○

GRADE	
⑤	⑨
⑥	⑩
⑦	⑪
⑧	⑫

ELEMENTARY OR JR. HIGH SUBJECT

Language Arts	○ Home Economics
○ Reading (Literature)	○ Industrial Arts
○ Language (Composition)	○ Mathematics
○ Spelling	○ Music
○ Art	○ Physical Education
○ Drama	○ Science
○ French	○ Social Studies
○ Guidance 9	○ Typing
○ Health	○ C ________
○ A ________	○ D ________
○ B ________	○ E ________

SUBJECT ____________

SCHOOL ____________

Place only one mark between each pair of words.
Complete ALL of the pairs.

	very much	a bit	neither	a bit	very much	
nice	○	○	○	○	○	awful
boring	○	○	○	○	○	interesting
unpleasant	○	○	○	○	○	pleasant
dislike	○	○	○	○	○	like
bright	○	○	○	○	○	dull
dead	○	○	○	○	○	alive
lively	○	○	○	○	○	listless (inactive, lazy)
exciting	○	○	○	○	○	tiresome (makes a person feel tired)
useless	○	○	○	○	○	useful
important	○	○	○	○	○	unimportant
impractical	○	○	○	○	○	practical (useful or workable)
worthless	○	○	○	○	○	valuable
helpful	○	○	○	○	○	unhelpful
unnecessary	○	○	○	○	○	necessary
harmful	○	○	○	○	○	advantageous (brings good or gain)
meaningful	○	○	○	○	○	meaningless
hard	○	○	○	○	○	easy
light	○	○	○	○	○	heavy (a lot of work)
clear	○	○	○	○	○	confusing (mixes a person up)
complicated	○	○	○	○	○	simple
elementary	○	○	○	○	○	advanced (beyond the beginning level)
strange	○	○	○	○	○	familiar
understandable	○	○	○	○	○	puzzling (hard to understand)
undemanding	○	○	○	○	○	rigorous (has to be exactly right)

Developed by V.R. Nyberg and S.C.T. Clarke.
University of Alberta. Edmonton. Canada

Printed in U.S.A.

Administrator

The temptation to fake the responses will be reduced if the person administering the SCALES is not the classroom teacher who teaches the subject or subjects being rated. If the teacher is administering the subject, special assurances of anonymity of responses should be given. If the forms are to be machine scored, the administrator should mention this, and the fact that no teacher can afford to take the time to look at anyone's responses.

Monitoring

Anonymity, or privacy is essential, however the need for privacy must be balanced against the need to ensure that students are using the sheets correctly. Monitor heavily while identifying data are being recorded, and sparingly while subjects are being rated. Before students turn in the sheets, ask them to make a quick check to see that a response has been made for each of the twenty-four adjective pairs.

SCORING

Machine Scoring

Machine scoring of the SSAS will be done without charge for Alberta schools by Alberta Education. The forms should be addressed to:

Student Records and Computer Services Branch
Alberta Education
3rd Floor, Devonian Building, East Wing
11160 Jasper Avenue
Edmonton, Alberta
T5K 0L2

Scoring for users outside of Alberta may be done by sending the forms to:

Psican Consulting Ltd.
Box 170, Room 103
Students' Union Building
University of Alberta
Edmonton, Alberta
T6G 2J7

There is a charge for this service.

The program presently in use produces three separate scores that are printed in the margin on the reverse side of the answer sheet. Large scale scoring can be done locally if an NCS optical reader is available. Assistance with programming is available from the Alberta Education address given above.

Hand Scoring

Hand scoring may be done without difficulty, although the task is laborious. Scores should be allocated as shown on the next page.

Characteristics of Scores

Each response has a value ranging from 1, representing the most negative feeling, to 5, corresponding to the most positive feeling. Since each of the three scales, evaluation, usefulness, and difficulty, contains five adjective pairs, the score range for each scale is 8 to 40.

The SSAS provides absolute scores, in the sense that positive and negative feelings are readily distinguished. A score of 24 on a scale represents a completely neutral score. Any score above 24 indicates a general positive feeling toward a subject, and similarly, any score below 24 represents a negative feeling.

It will be observed that a positive attitude on the evaluative scale (nice, interesting, pleasant, like, bright, alive, lively, exciting) was signified by a positive score. Usefulness (useful, important, practical, valuable, helpful, necessary, advantageous, meaningful) was signified by a positive score. Difficulty (hard, heavy, confusing, complicated, advanced, strange, puzzling, rigorous) was associated with a negative score; that is, the higher the score the easier the student found the subject to be. This is consistent with the decision to make higher scores associated with favorable attitudes.

Evaluation

nice	5	4	3	2	1	awful
boring	1	2	3	4	5	interesting
unpleasant	1	2	3	4	5	pleasant
dislike	1	2	3	4	5	like
bright	5	4	3	2	1	dull
dead	1	2	3	4	5	alive
lively	5	4	3	2	1	listless(inactive,lazy)
exciting	5	4	3	2	1	tiresome(makes a person feel tired)

Usefulness

useless	1	2	3	4	5	useful
important	5	4	3	2	1	unimportant
impractical	1	2	3	4	5	practical
worthless	1	2	3	4	5	valuable
helpful	5	4	3	2	1	unhelpful
unnecessary	1	2	3	4	5	necessary
harmful	1	2	3	4	5	advantageous(brings good or gain)
meaningful	5	4	3	2	1	meaningless(doesn't make sense)

Difficulty

hard	1	2	3	4	5	easy
light	5	4	3	2	1	heavy(a lot of work)
clear	5	4	3	2	1	confusing(mixes a person up)
complicated	1	2	3	4	5	simple
elementary	5	4	3	2	1	advanced(beyond the beginning level)
strange	1	2	3	4	5	familiar
understandable	5	4	3	2	1	puzzling(hard to understand)
undemanding	5	4	3	2	1	rigorous(has to be exactly right)

USING THE NORMS TABLES

Time of Year

It was assumed at the outset of the norming project that attitudes towards school subjects would vary over the course of a school year, therefore, the scales were administered so as to produce three sets of norms. Fall norms were based on testing conducted in late September and early October. Mid year norms resulted from tests administered in late November or early December for semestered (half year) courses offered at the high school level. For all full year courses (elementary subjects, junior high school subjects, and some senior high school subjects) mid-year norms were based on tests administered in early February. End-of-year norms were computed from tests given in late May and early June.

Interpreting Norms

Percentile norms, only, were computed. These are set forth by grade and subject in the pages that follow.

The percentile rank (labelled %ile in the table) of the mean score of a class compared to all the classes in the province is given in the norms table. The percentile rank is the percentage of classes that received a mean lower than the mean of the class being observed. Thus, if a class has a mean Evaluative score of 26.2 for a subject, and the percentile rank is 82, this indicates that the mean score is higher than 82 percent of all the classes in the province. Only 18 percent of the classes have means higher than 26.2. Administrators interpreting scores should be aware of one of the weaknesses of percentile ranks. Small differences in the middle of the scale tend to be exaggerated, while differences at the extremes are minimized. For instance, the difference in raw scores between percentile ranks of 45 and 55 will be much smaller than the differences between means corresponding to percentile ranks of 85 and 95. An example of an interpretation is given below.

Let us assume that Miss Hypo Thetical has administered the School Subjects Attitude Scales to her Grade 6 Social Studies class in February, and that the scoring service returned the following results.

	Evaluative				Usefulness				Difficulty			
	Mean	%ile	SD	NS	Mean	%ile	SD	NS	Mean	%ile	SD	NS
	25.5	29	6.3	24	31.2	44	6.1	24	23.2	24	5.2	24
PROV.	28.4	49	3.7		31.6	49	2.8		25.1	57	2.1	

Miss Thetical would interpret the scores as follows: The Evaluative percentile rank of 29 indicates that the class likes the subject less than most students; that is, only 29% of the classes like it less. However, the mean of 25.5, while well below the provincial average of 28.4, indicates that, as a group, the students tend to like the subject. This follows from the fact that the mean is well above the "neutral" attitude score of 24. The standard deviation of 6.3 in itself is of no importance. It should not be compared to the provincial S.D. of 3.7 because the two figures apply to different things. The standard deviation would have some meaning if the variability of several classes were being compared.

The Usefulness percentile rank of 44 indicates to Miss Thetical that her class is only slightly below the mean. The mean score of 31.2 indicates a definite positive attitude towards the usefulness of the subject.

With respect to Difficulty, the class finds the subject more different than most other classes. Only 24% of the classes in Alberta rated it more difficult than did Miss Thetical's class. In the absolute sense, also, the class finds the subject to be difficult, as indicated by the mean score of 23.1, which is well below the "neutral" value of 24.

As a result of the interpretation Miss Thetical might decide to organize projects that the students would find more interesting than those used in the past. The Usefulness is not a problem, but the perceived Difficulty should be given some attention. While the subject should not be "watered down," the teaching strategies, and expectations might be modified so that fewer students find it difficult.

Had Miss Hypo Thetical hand scored the sheets she would have proceeded somewhat differently. The scoring would have produced means identical to those shown above, however, she would have to refer to the norms table for more complete information.

Percentile Ranks would be determined by referring to Table 22. The mean score on the Evalutive scale was 25.5, therefore Miss Thetical would locate, in the "raw score" column, the value 25, then move to the right to the "mid-year" column. The percentile rank listed is 24, which applies to a score of 25. Since the raw score being considered is 25.5, we interpolate between the percentiles for raw scores of 25 and 26. A score of 25.5 is midway between the two, therefore the percentile rank sought is midway between the values 24 and 33; that is, the percentile ranks corresponding to mean scores of 25 and 26. The value would be 28.5, which would be rounded off to 29. This is the same percentile rank that resulted from machine procedures.

The usefulness mean of 31.2 would be treated in a similar way. The percentile ranks corresponding to scores of 31 and 32 are 43 and 56 respectively. The score of 31.2 is two - tenths of the way between 31 and 32, therefore the percentile rank sought is two - tenths of the 13 points between 43 and 56. The resulting value is 43 + (.2 x 13) = 45.6, which rounds off to 46. This is comparable to the value of 44 determined by machine processing. The slight difference is attributable to the fact that the machine processing method uses more precise calculation procedures than the hand methods that produce approximations.

The Difficulty mean of 23.2 yields a percentile rank of 24.5, which is rounded to 25. This is very close to the percentile rank of 24 produced by machine processing.

A teacher who is using the norms tables according to the procedures described above must be careful to select the appropriate subject and grade table, and then to employ the column in the table that corresponds to the time of year of the administration of the scales.

The tables labelled Provincial Statistics that follow the norms tables are intended to provide an overview of all the subjects that were normed. They would probably be of no direct use to Miss Thetical, however, a school or school system embarking on a research project where attitudes are being assessed might find the provincial statistics of value. The provincial statistics tables give information on sizes of samples that is not provided elsewhere.

Caution

It cannot be expressed too forcefully that the norms computed apply to mean scores of classes. It is completely improper to use these norms for interpreting scales of individual students.

Sex Differences

There were differences in attitudes between males and females for most school subjects. There was no point in computing separate norms because very few classes are made up entirely of one sex. The norms were based on classes as they existed, and are applicable to most classes directly. However, in classes where the proportion of males and females differs substantially from the proportion of each in the norming sample, adjustments should be made. The adjustment is a simple matter of interpolation. The following formula may be used to perform the interpolation, and arrive at an adjusted score. This adjusted score should be used to determine the percentile rank of a class.

$$M_a = M_r + D_m(P_l - P_n)$$

Where: M_a = adjusted mean

M_r = raw mean, that is, the mean for your class

D_m = difference between means of males and females, that is, the amount that the mean for females exceeds the mean for males in the norming sample

P_l = proportion of males in local group (your class)

P_n = proportion of males in norming sample

The values of D_m and P_n are given at the bottom of each table of norms.

A sample calculation on a fictitious English 10 class on the Usefulness scale is shown below.

The fictitious class has a mean (M_r) of 31.4 when tested at mid year, and the proportion of males in the class (P_l) is .82; that is 82% of the students in the class were males. On the norms table for English 10, P_n is given as .46. The difference between means of males and females (D_m), shown at the bottom of the norms table, is 3.68. Substitution in the equation produces the following:

$$M_a = 31.4 + 3.68(.82-.46)$$

$$= 31.4 + 3.68(.36)$$

$$= 32.7$$

When the percentile rank for the class on the Usefulness scale is being determined, a mean score of 32.7 rather than 31.4 would be used in entering the norms table. It might be noted that a mean score of 31.4 corresponds to a percentile rank of 38, while a mean of 32.7 corresponds to a percentile rank of 54 for mid year testing.

In the example given the correction for sex differences is substantial, but this is largely because a rather extreme example was chosen for illustrative purposes. It would appear that only rarely would a correction produce a substantial difference in the elementary and junior high school grades. Corrections might be warranted in a few of the high school subjects, especially if precise results are needed, such as in the case of a research project.

TABLE 1
Mean Raw Scores for Classes to Percentile Rank
Reading(Literature)
Grade 5

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18										18
19										19
20		1								20
21		1	1					1		21
22	1	2	1					2	1	22
23	2	5	2				1	7	2	23
24	5	10	7				3	14	7	24
25	10	16	14				10	22	16	25
26	17	24	22				24	34	29	26
27	27	34	33	2	2	1	42	49	47	27
28	39	45	46	4	4	3	62	65	65	28
29	51	56	60	7	7	6	79	78	80	29
30	63	65	73	15	15	13	90	87	90	30
31	75	75	84	23	23	22	97	94	96	31
32	85	84	92	34	36	35	99	97	99	32
33	93	92	97	51	56	55	99	99	99	33
34	98	96	99	69	74	74		99		34
35	99	99		84	88	89		99		35
36				93	95	97				36
37				98	98	99				37
38				99	99					38
39										39
40										40

Pn = 0.50
Dm = 1.79 1.82 0.92

PERCENTILE NORMS

TABLE 2
Mean Raw Scores for Classes to Percentile Rank
Language(Composition)
Grade 5

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18		1								18
19		2	1							19
20	1	3	2							20
21	2	7	5				1	1	1	21
22	4	12	9				2	2	3	22
23	8	17	15				7	7	8	23
24	14	24	22				13	13	14	24
25	21	33	29				22	26	26	25
26	28	41	37	1	1	1	37	44	43	26
27	37	50	48	4	4	4	56	65	62	27
28	48	63	62	8	9	9	76	84	81	28
29	61	74	74	14	15	15	89	93	91	29
30	73	84	84	21	25	24	94	96	95	30
31	84	92	92	33	37	35	97	98	98	31
32	92	97	97	50	52	49	98	99	99	32
33	97	99	99	69	73	66	99	99	99	33
34	99	99		83	88	81	99	99	99	34
35				93	95	92	99			35
36				97	97	96				36
37				99	99	97				37
38						99				38
39										39
40										40

Pn = 0.50
Dm = 2.19 2.10 1.06

TABLE 3
Mean Raw Scores for Classes to Percentile Rank
Spelling
Grade 5

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18										18
19		1								19
20		1								20
21	1	2	1							21
22	2	5	2							22
23	5	8	5					1	1	23
24	9	12	10		1		1	2	2	24
25	13	19	15	1	2		2	6	6	25
26	20	26	23	3	3	1	8	14	11	26
27	30	34	33	4	4	2	24	25	21	27
28	40	43	44	5	5	4	51	42	36	28
29	51	53	54	8	9	5	79	62	57	29
30	62	63	66	14	15	8	93	79	74	30
31	75	73	80	22	25	16	98	89	85	31
32	87	83	90	33	36	28		96	94	32
33	94	90	96	49	50	42		99	98	33
34	98	95	99	66	66	60				34
35	99	98	99	81	80	79				35
36		99		91	90	90				36
37				97	96	97				37
38				99	98	99				38
39										39
40										40

Pn = 0.50
Dm = 2.98 2.77 1.98

TABLE 4
Mean Raw Scores for Classes to Percentile Rank
Art
Grade 5

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18			1							18
19			1							19
20			2			1				20
21			2			1				21
22	1	1	2	1		2				22
23	2	2	2	1	1	2				23
24	2	2	3	2	1	3				24
25	2	2	4	2	2	4			1	25
26	2	2	5	3	3	5	1	1	2	26
27	3	3	6	4	4	7	2	2	4	27
28	4	5	6	6	6	11	4	4	8	28
29	6	6	6	8	10	16	9	11	16	29
30	6	6	8	13	15	25	18	21	26	30
31	6	7	11	19	26	39	31	34	43	31
32	8	9	16	29	43	56	51	54	61	32
33	11	13	23	44	63	73	73	76	78	33
34	19	21	31	62	79	83	86	89	89	34
35	26	31	45	78	89	90	95	96	96	35
36	37	49	64	85	96	96	99	99	99	36
37	58	71	81	91	99	99	99	99	99	37
38	79	87	92	97						38
39	92	96	98	99						39
40	98	99								40

Pn = 0.50
Dm = 1.54 1.43 0.57

TABLE 5
Mean Raw Scores for Classes to Percentile Rank
French
Grade 5

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11			1							11
12			4							12
13			5							13
14		1	5							14
15		3	9			1		1	1	15
16		5	13			2		2	3	16
17	2	5	18		2	4	1	3	5	17
18	4	9	23		4	5	3	5	8	18
19	5	14	29		5	7	5	8	12	19
20	9	21	34	1	7	9	8	12	15	20
21	15	26	36	3	9	11	13	15	22	21
22	22	32	40	5	11	14	19	23	34	22
23	29	36	44	7	13	18	32	35	47	23
24	34	40	47	10	17	24	46	47	61	24
25	38	45	50	13	23	28	61	61	72	25
26	43	49	57	19	28	34	73	72	80	26
27	47	54	66	26	34	40	84	78	88	27
28	53	63	72	33	40	47	91	87	93	28
29	62	71	78	41	47	54	95	92	95	29
30	70	78	84	49	54	60	98	94	98	30
31	78	85	88	58	60	67	99	97	99	31
32	85	89	91	67	68	75	99	99	99	32
33	90	93	93	75	75	81	99	99	99	33
34	94	95	95	85	82	87		99	99	34
35	96	97	97	93	89	93		99		35
36	97	99	98	96	93	96				36
37	99		99	99	96	97				37
38					97	99				38
39					99					39
40										40

Pn = 0.50

Dm = 4.49 3.89 3.14

TABLE 6
Mean Raw Scores for Classes to Percentile Rank
Health
Grade 5

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12									1	12
13									1	13
14			1						1	14
15	1		2					1	1	15
16	3	1	4					1	1	16
17	5	4	5				1	1	1	17
18	5	5	5				1	1	1	18
19	6	6	6				1	1	2	19
20	6	7	7				1	1	3	20
21	7	8	8		1		1	3	4	21
22	9	12	12	1	1	1	2	4	7	22
23	13	17	17	2	2	2	3	9	12	23
24	18	25	24	3	4	3	7	15	16	24
25	24	32	30	5	6	5	14	20	20	25
26	31	41	36	7	8	7	20	31	28	26
27	38	54	45	9	10	9	31	47	39	27
28	45	68	57	12	14	12	48	65	53	28
29	57	77	68	17	20	16	68	81	70	29
30	68	85	77	24	29	24	82	87	81	30
31	75	91	84	36	41	33	89	91	86	31
32	82	95	90	50	55	46	94	96	90	32
33	88	98	94	67	70	63	98	99	94	33
34	92	99	97	80	81	77			97	34
35	96	99	98	87	89	86			99	35
36	98		99	95	96	92				36
37	99		99	99	99	98				37
38	99									38
39	99									39
40										40

Pn = 0.49
Dm = 1.87 2.76 0.94

TABLE 7
Mean Raw Scores for Classes to Percentile Rank
Mathematics
Grade 5

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18									1	18
19									1	19
20									1	20
21			1						2	21
22			2				1	1	6	22
23			4				3	3	15	23
24		1	8				9	10	26	24
25	1	3	13				18	22	41	25
26	3	8	19				31	40	56	26
27	7	14	26				49	58	70	27
28	14	25	38				64	76	83	28
29	23	38	50			1	80	89	93	29
30	37	51	60	1		2	92	96	98	30
31	52	64	69	4	1	4	97	99		31
32	66	76	78	12	3	12	99			32
33	79	88	87	23	13	22				33
34	90	95	93	37	29	32				34
35	96	99	98	58	51	50				35
36	99		99	79	79	69				36
37				93	95	84				37
38				98	99	95				38
39				99	99	99				39
40						99				40

Pn = 0.51
Dm = -0.21 1.10 -0.40

TABLE 8
Mean Raw Scores for Classes to Percentile Rank
Music
Grade 5

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8				2	1					8
9			1	2	1					9
10		1	1	2	1					10
11	1	1	1	2	1					11
12	1	1	1	2	1					12
13	1	1	1	2	1					13
14	1	1	1	2	1	1				14
15	1	1	1	2	2	1				15
16	1	1	2	2	2	1				16
17	1	2	2	2	2	1				17
18	2	2	3	2	2	2				18
19	2	3	6	3	3	2			1	19
20	3	6	7	3	4	4	1		1	20
21	6	7	9	3	5	5	1	1	2	21
22	7	9	11	5	7	6	2	2	2	22
23	9	11	13	6	9	10	2	2	3	23
24	11	13	17	7	13	14	4	4	6	24
25	13	16	22	10	17	19	7	7	10	25
26	16	21	29	15	21	26	11	13	15	26
27	21	26	36	20	28	36	17	20	23	27
28	27	32	42	28	37	44	25	32	32	28
29	35	40	48	38	44	54	34	46	43	29
30	42	47	55	48	52	66	46	60	56	30
31	48	53	64	59	62	74	58	76	69	31
32	55	60	72	70	70	82	71	89	81	32
33	63	68	79	78	77	88	83	95	90	33
34	71	75	84	87	84	93	92	98	96	34
35	78	80	89	93	90	96	96	99	98	35
36	84	85	94	96	93	97	98		98	36
37	88	90	97	99	96	99	98		99	37
38	92	94	98		98	99	99			38
39	96	97	99		99					39
40	98	98								40

Pn = 0.50
Dm = 5.13 4.56 2.58

TABLE 9
Mean Raw Scores for Classes to Percentile Rank
Physical Education
Grade 5

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18										18
19										19
20										20
21		1								21
22		1								22
23		1								23
24		1						1		24
25		1	1					1	1	25
26	1	2	1		1		1	2	1	26
27	1	3	1		2		2	6	2	27
28	1	4	1		3	1	6	12	6	28
29	2	6	2	1	4	2	11	18	12	29
30	3	8	3	2	7	3	18	29	18	30
31	4	10	5	3	12	6	31	44	30	31
32	5	15	8	7	20	13	50	59	48	32
33	9	21	13	17	32	25	70	75	66	33
34	14	27	19	31	44	39	88	89	82	34
35	21	38	29	50	59	59	96	96	93	35
36	31	51	44	73	77	79	99	99	98	36
37	49	66	62	90	88	92	99	99	99	37
38	70	82	82	98	94	98		99	99	38
39	88	94	95		98					39
40	98	99								40

Pn = 0.51
Dm = -1.05 -0.20 -0.57

TABLE 10
Mean Raw Scores for Classes to Percentile Rank
Science
Grade 5

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15			1							15
16			1							16
17			3							17
18			4							18
19		1	4					1	1	19
20	1	2	5					2	3	20
21	2	4	7				1	4	4	21
22	4	5	8				2	6	6	22
23	5	7	12			1	4	9	10	23
24	6	8	18		1	2	6	15	18	24
25	8	13	24		2	3	11	27	30	25
26	12	20	33	1	3	5	23	42	47	26
27	20	30	42	2	4	8	40	58	63	27
28	29	39	49	4	8	13	57	73	76	28
29	39	49	58	7	15	20	74	83	86	29
30	49	59	67	13	23	28	86	91	93	30
31	59	69	75	24	34	38	94	95	97	31
32	69	78	80	39	48	52	97	98	99	32
33	78	86	86	58	63	66	99			33
34	86	93	93	78	77	78				34
35	93	96	95	92	89	88				35
36	97	98	97	97	95	94				36
37	98		99	99	98	97				37
38					99	99				38
39										39
40										40

Pn = 0.50
Dm = -1.27 0.93 -0.50

TABLE 11
Mean Raw Scores for Classes to Percentile Rank
Social Studies
Grade 5

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16		1								16
17		3						1		17
18	2	5	1					1		18
19	4	7	3					2	1	19
20	5	8	5				1	4	2	20
21	7	11	7	1	1		1	9	4	21
22	10	16	9	2	2		3	16	11	22
23	14	22	14	2	2	1	8	26	20	23
24	19	28	20	4	4	2	17	38	33	24
25	25	36	26	5	5	2	30	52	50	25
26	32	45	35	7	7	4	47	64	65	26
27	42	52	46	10	12	6	62	73	76	27
28	50	61	55	15	17	9	75	82	86	28
29	58	70	63	20	25	15	85	90	94	29
30	65	77	72	30	38	21	93	96	98	30
31	72	83	80	44	53	34	97	98	99	31
32	80	89	87	57	67	51	99	99		32
33	87	93	93	70	78	67				33
34	92	96	96	79	86	78				34
35	95	98	98	87	94	87				35
36	97	99	99	94	97	95				36
37	99			97	99	98				37
38				98	99	99				38
39				99						39
40										40

Pn = 0.50
Dm = -0.32 1.21 -0.18

TABLE 12
Mean Raw Scores for Classes to Percentile Rank
Reading(Literature)
Grade 6

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18			1							18
19		1	2							19
20	1	1	3					1		20
21	2	2	4				1	2	1	21
22	4	4	7				2	3	3	22
23	7	7	12				3	5	4	23
24	14	13	18			1	6	10	9	24
25	22	20	27	1		1	13	19	18	25
26	36	33	39	1	1	2	26	34	33	26
27	55	50	52	2	1	4	44	52	51	27
28	72	66	67	4	2	6	66	69	69	28
29	83	79	78	8	5	11	83	84	84	29
30	89	87	86	15	11	19	92	92	92	30
31	94	91	90	25	23	29	97	97	97	31
32	98	94	93	38	37	41		99	99	32
33	99	98	96	56	55	58				33
34		99	98	77	76	77				34
35			99	91	91	91				35
36				97	97	96				36
37				98	98	97				37
38				99		99				38
39										39
40										40

Pn = 0.51
Dm = 1.72 2.12 0.97

TABLE 13
Mean Raw Scores for Classes to Percentile Rank
Language(Composition)
Grade 6

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16			1							16
17		1	2							17
18		2	4							18
19	1	3	5							19
20	3	5	8						1	20
21	5	8	13				1	1	3	21
22	9	13	20			1	2	3	7	22
23	17	19	27	1		2	6	8	15	23
24	27	27	35	2		3	15	18	27	24
25	38	35	43	3		4	28	33	42	25
26	51	43	54	5	1	7	47	52	58	26
27	65	56	66	8	2	10	66	72	74	27
28	78	68	75	11	5	13	80	84	83	28
29	89	77	83	16	9	19	90	92	92	29
30	94	86	90	22	15	27	96	98	97	30
31	97	91	94	33	25	37	99	99	99	31
32	99	96	96	46	39	52	99	99	99	32
33	99	98	98	61	59	67	99		99	33
34		99	99	79	82	82				34
35		99	99	91	95	93				35
36				96	98	97				36
37				98	99	98				37
38				99		99				38
39										39
40										40

Pn = 0.49
Dm = 1.80 2.26 1.56

TABLE 14
Mean Raw Scores for Classes to Percentile Rank
Spelling
Grade 6

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16			1							16
17			2							17
18			3							18
19			5							19
20	1	1	6							20
21	3	2	8							21
22	6	4	12						1	22
23	8	6	16				1	1	3	23
24	12	9	21			1	3	3	5	24
25	17	14	30			2	6	7	10	25
26	26	20	40		1	4	12	13	19	26
27	39	32	50	1	2	5	24	24	32	27
28	52	47	60	2	4	7	41	41	46	28
29	66	60	70	5	7	13	58	57	61	29
30	77	71	79	9	12	17	75	74	76	30
31	86	82	86	16	17	22	89	89	88	31
32	93	91	91	25	25	31	97	97	96	32
33	96	95	95	40	39	44	99	99	99	33
34	98	98	97	62	57	59			99	34
35	99	99	98	82	76	75				35
36			99	94	90	87				36
37				99	97	95				37
38					99	98				38
39						99				39
40										40

Pn = 0.51
Dm = 2.61 2.77 2.06

TABLE 15
Mean Raw Scores for Classes to Percentile Rank
Art
Grade 8

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13			1							13
14			1							14
15			1							15
16			1							16
17	1		1							17
18	1		1							18
19	1	1	1			1				19
20	1	1	1			2				20
21	1	1	1	1		2				21
22	1	1	2	1	1	3				22
23	1	1	2	2	2	4		1	1	23
24	1	1	3	3	2	6	1	1	1	24
25	2	1	6	4	4	8	1	2	2	25
26	3	2	9	6	6	11	3	3	4	26
27	6	2	10	9	8	16	6	7	8	27
28	9	4	11	14	11	22	11	14	15	28
29	10	7	13	20	17	30	20	24	26	29
30	11	10	17	28	25	43	33	38	39	30
31	16	11	23	41	36	59	50	55	55	31
32	23	16	30	57	51	72	69	74	72	32
33	33	24	40	74	69	83	85	88	86	33
34	47	35	53	86	82	90	94	97	94	34
35	61	49	66	93	90	96	98		98	35
36	75	65	78	97	96	98				36
37	87	79	89	99	98	99				37
38	96	91	95		99					38
39	99	98	98							39
40										40

Pn = 0.51
Dm = 0.85 0.76 -0.03

TABLE 16
Mean Raw Scores for Classes to Percentile Rank
French
Grade 6

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8	1	1						1		8
9	1	1						1		9
10	1	1	1			1		1		10
11	1	2	1			1	1	1		11
12	2	3	1	1	1	1	1	1		12
13	3	5	2	1	1	1	1	2	1	13
14	5	8	4	1	1	1	1	2	1	14
15	9	10	6	1	1	1	1	4	1	15
16	12	14	9	1	1	1	2	7	1	16
17	17	19	14	1	1	1	5	11	1	17
18	23	27	21	1	2	2	9	17	3	18
19	30	34	30	2	3	4	15	24	7	19
20	36	39	36	4	6	7	24	33	14	20
21	41	43	41	7	9	9	36	43	25	21
22	47	48	47	9	14	14	47	51	38	22
23	52	53	53	15	20	19	58	59	51	23
24	58	58	58	21	24	23	68	68	63	24
25	65	63	66	26	31	29	77	75	74	25
26	71	69	73	33	39	36	85	80	84	26
27	75	73	77	40	45	41	91	87	90	27
28	80	77	82	45	50	46	94	91	95	28
29	84	82	86	49	59	50	96	94	97	29
30	87	85	90	55	68	59	97	96	97	30
31	91	87	95	65	76	68	98	97	98	31
32	95	92	97	74	83	75	99	97	99	32
33	97	96	98	82	90	82	99	98		33
34	98	97	99	88	95	89		99		34
35	99	98	99	94	98	94		99		35
36	99	99		97	99	97				36
37		99		98		98				37
38				99		99				38
39										39
40										40

Pn = 0.49
Dm = 3.71 4.49 2.73

TABLE 17
Mean Raw Scores for Classes to Percentile Rank
Health
Grade 6

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13			1							13
14			1							14
15			3							15
16			5							16
17	1		8							17
18	2	1	11			1				18
19	4	2	16			2			1	19
20	7	5	20			2			2	20
21	12	10	22			3			5	21
22	17	16	26	1	1	5	1	1	9	22
23	21	21	32	2	2	7	4	6	14	23
24	27	26	37	3	3	7	10	14	19	24
25	34	33	42	5	5	10	17	30	29	25
26	40	40	48	7	7	16	28	51	41	26
27	49	49	56	11	8	21	42	68	52	27
28	60	61	65	19	14	26	56	83	64	28
29	70	71	73	25	22	31	69	95	75	29
30	80	81	79	34	29	40	80	99	84	30
31	87	88	86	50	41	51	89		90	31
32	91	92	90	68	56	63	95		95	32
33	93	95	91	81	72	74	99		98	33
34	97	98	94	87	81	81				34
35	99		96	94	87	85				35
36			98	98	94	89				36
37			99	99	98	94				37
38				99	99	97				38
39					99	98				39
40						99				40

Pn = 0.51
Dm = 1.37 2.40 1.17

TABLE 18
Mean Raw Scores for Classes to Percentile Rank
Mathematics
Grade 6

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17									1	17
18			1					1	1	18
19			1					1	2	19
20		1	3				1	3	5	20
21	1	2	4				2	7	10	21
22	2	3	6				5	14	18	22
23	4	5	10				11	25	29	23
24	6	10	14				20	38	44	24
25	11	16	22				32	55	57	25
26	16	25	34				47	71	71	26
27	25	38	43				62	83	83	27
28	38	50	52	1		1	76	92	91	28
29	49	61	61	2	1	3	87	97	96	29
30	60	71	70	3	3	4	94	98	98	30
31	70	81	79	6	6	7	97	99	99	31
32	79	88	86	10	10	11	99	99	99	32
33	87	94	91	16	19	20	99		99	33
34	92	97	94	29	33	33	99			34
35	96	99	97	46	54	50				35
36	98		98	65	75	68				36
37	99		99	81	90	82				37
38				93	98	93				38
39				99		98				39
40						99				40

Pn = 0.50
Dm = -0.47 0.96 -0.21

TABLE 19
Mean Raw Scores for Classes to Percentile Rank
Music
Grade 6

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12		1	1							12
13		1	1							13
14		2	2		1					14
15		3	4		3	1			1	15
16		4	5		4	3			1	16
17		6	7		4	4		1	1	17
18		9	10		5	5	1	1	1	18
19	1	11	13		6	6	1	1	1	19
20	2	14	17	1	9	10	1	1	2	20
21	3	18	22	3	13	15	1	2	4	21
22	6	22	26	4	17	19	2	4	6	22
23	9	26	32	6	21	25	4	6	8	23
24	14	32	39	10	27	34	6	11	12	24
25	20	39	47	16	35	44	11	16	17	25
26	26	46	52	24	43	53	17	23	24	26
27	35	50	57	35	51	62	26	32	33	27
28	46	55	63	47	57	69	39	43	43	28
29	53	61	70	58	65	76	51	54	52	29
30	62	66	77	68	71	86	64	67	61	30
31	71	73	82	78	77	91	79	80	72	31
32	79	80	85	88	84	95	88	88	82	32
33	86	83	89	95	90	98	94	94	89	33
34	92	87	93	98	94	99	98	98	94	34
35	96	91	96	99	96			99	98	35
36	97	94	97		98				99	36
37	99	96	99		99					37
38		97								38
39		99								39
40										40

Pn = 0.50
Dm = 4.70 4.55 2.50

TABLE 20
Mean Raw Scores for Classes to Percentile Rank
Physical Education
Grade 6

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18										18
19										19
20										20
21										21
22										22
23										23
24		1								24
25		1						1		25
26		2			1		1	3	1	26
27	1	3	1	1	3	1	2	7	2	27
28	1	5	1	2	5	3	5	16	5	28
29	1	8	1	4	8	6	12	30	15	29
30	3	12	3	7	12	10	24	46	29	30
31	6	17	6	12	21	15	40	62	47	31
32	12	23	12	21	32	25	56	76	65	32
33	17	30	17	32	41	37	72	88	81	33
34	25	40	25	43	53	49	85	94	91	34
35	36	51	37	58	71	65	93	97	96	35
36	50	64	50	76	86	82	96	99	98	36
37	66	79	66	90	94	93	99	99	99	37
38	86	92	85	97	98	98	99			38
39	97	98	96	99						39
40	99	99	99							40

Pn = 0.50
Dm = -1.60 -1.11 -0.74

TABLE 21
Mean Raw Scores for Classes to Percentile Rank
Science
Grade 8

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12			1							12
13			1						1	13
14			1						1	14
15	1		2						1	15
16	1		3				1	1	1	16
17	1	1	4			1	1	1	2	17
18	2	1	6			1	1	2	2	18
19	3	2	8	1		1	2	2	3	19
20	4	3	11	1		1	2	3	6	20
21	6	4	14	1	1	2	3	5	12	21
22	8	7	19	1	1	2	6	11	20	22
23	12	10	24	2	1	3	12	20	26	23
24	16	15	30	3	2	5	20	29	36	24
25	21	22	36	4	3	7	27	43	54	25
26	27	29	44	7	5	9	38	63	71	26
27	34	37	51	9	8	12	56	79	83	27
28	43	46	59	12	11	17	74	90	91	28
29	50	56	67	17	16	24	85	97	97	29
30	60	66	74	25	25	34	94	99	99	30
31	69	76	82	34	37	45	98	99	99	31
32	77	85	88	46	50	55	99	99	99	32
33	86	92	92	57	66	68	99	99	99	33
34	91	95	95	71	81	80	99	99	99	34
35	94	97	97	84	92	89	99		99	35
36	97	98	98	92	97	96	99			36
37	98	99	99	97	98	98				37
38	99		99	98	99	99				38
39	99			99		99				39
40										40

Pn = 0.51

Dm = -1.82 0.35 -0.74

TABLE 22
Mean Raw Scores for Classes to Percentile Rank
Social Studies
Grade 6

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15	1									15
16	1		1							16
17	2		1							17
18	4		2				1		1	18
19	7	1	4			1	2	1	2	19
20	10	1	7	1		2	3	2	4	20
21	14	3	11	2		2	6	5	8	21
22	17	6	16	2	1	2	11	11	15	22
23	24	11	23	3	2	4	20	22	26	23
24	32	16	32	5	2	6	31	37	40	24
25	37	24	38	7	4	8	43	56	56	25
26	44	33	45	9	6	10	59	75	73	26
27	51	42	53	13	9	14	74	86	84	27
28	59	50	63	18	13	20	84	93	91	28
29	67	60	71	24	20	28	90	97	96	29
30	72	69	77	33	30	37	95	98	98	30
31	77	76	83	44	43	48	98	99	98	31
32	83	83	89	54	56	60	98	99	99	32
33	88	89	94	66	71	73	99		99	33
34	92	94	97	81	86	86	99			34
35	95	97	98	91	94	93				35
36	97	98	99	96	97	96				36
37	98	99		98	98	98				37
38	99			99	99	99				38
39				99		99				39
40										40

Pn = 0.50
Dm = -0.35 1.44 0.10

TABLE 23
Mean Raw Scores for Classes to Percentile Rank
Reading(Literature)
Grade 7

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17	1									17
18	3		1							18
19	5		4						1	19
20	9	1	8						1	20
21	12	4	12					1	3	21
22	17	9	17				1	3	8	22
23	25	17	28			1	5	9	16	23
24	36	29	43			2	15	20	25	24
25	48	48	55	1	1	4	32	39	39	25
26	58	64	66	3	3	8	56	60	56	26
27	66	75	76	6	7	15	79	79	71	27
28	73	84	83	11	14	23	93	92	83	28
29	79	91	88	18	24	33	98	97	91	29
30	85	94	92	29	35	47	99	99	96	30
31	88	97	94	41	50	62			98	31
32	91		97	54	63	73			99	32
33	94		99	66	77	85				33
34	96			77	89	94				34
35	98			89	97	98				35
36				97	99					36
37				99						37
38										38
39										39
40										40

Pn = 0.50
Dm = 2.11 2.16 1.11

TABLE 24
Mean Raw Scores for Classes to Percentile Rank
Language(Composition)
Grade 7

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15	1		1							15
16	2		2							16
17	4	1	3							17
18	7	3	5				1	1	1	18
19	10	5	8				3	2	2	19
20	15	8	12				6	5	6	20
21	21	13	18			1	12	9	12	21
22	28	20	25		1	1	20	17	26	22
23	36	28	35	1	1	1	31	30	45	23
24	44	38	44	1	1	2	48	48	66	24
25	51	48	53	2	2	3	66	68	80	25
26	61	59	63	3	3	4	80	81	90	26
27	71	69	73	5	5	6	88	90	96	27
28	79	78	83	8	8	10	94	96	97	28
29	86	86	90	15	13	16	97	97	99	29
30	92	93	95	25	19	25	98	98		30
31	96	96	96	36	29	35	99	99		31
32	96	96	97	53	42	47				32
33	97	97	98	73	57	61				33
34	98	98	99	87	74	77				34
35	99	99	99	95	87	89				35
36	99			99	95	95				36
37					98	98				37
38										38
39										39
40										40

Pn = 0.50
Dm = 2.15 2.70 1.78

TABLE 25
Mean Raw Scores for Classes to Percentile Rank
Art
Grade 7

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16			1			1				16
17			1			1				17
18			2			2				18
19			5			3				19
20			9			5				20
21			12		1	9		1	1	21
22		1	17	1	2	16		2	1	22
23	1	3	21	2	3	24	1	6	4	23
24	3	7	23	3	7	30	4	13	9	24
25	8	14	27	7	15	34	11	23	18	25
26	13	20	31	15	25	40	23	36	28	26
27	18	26	36	24	33	51	40	49	38	27
28	23	35	42	31	47	64	58	63	52	28
29	28	45	50	40	63	76	76	76	68	29
30	35	57	59	55	77	85	90	89	80	30
31	43	71	67	73	90	92	96	95	90	31
32	53	84	75	86	97	97	98	96	95	32
33	65	92	81	94	98	98		98	97	33
34	75	97	86	98	99	98			99	34
35	84	99	91	98		98				35
36	90		95	99		99				36
37	95		98							37
38	98		99							38
39	99									39
40										40

Pn = 0.53

Dm = 2.05 2.38 0.22

TABLE 26
Mean Raw Scores for Classes to Percentile Rank
Drama
Grade 7

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8						3				8
9						3				9
10						3				10
11						3				11
12						3				12
13			1			3				13
14			3			3				14
15		1	3			4				15
16		3	3			6				16
17		3	3			11		1		17
18		3	3			11		3	1	18
19		3	4			11		3	3	19
20		4	5			11		4	3	20
21		5	7			12		5	3	21
22		7	8		4	15		7	4	22
23		9	9		8	18		9	7	23
24		15	14		9	23	1	12	8	24
25		20	18		14	30	4	20	9	25
26		30	24		23	35	7	31	14	26
27	1	38	34	4	39	43	9	39	22	27
28	3	39	38	8	54	54	19	50	32	28
29	3	46	38	9	67	60	35	68	42	29
30	4	55	41	14	81	62	60	86	51	30
31	8	60	47	23	93	67	85	93	68	31
32	16	66	55	38		78	95	97	86	32
33	30	77	59	52		85			91	33
34	39	85	64	66		89			94	34
35	50	91	74	78		95			98	35
36	64	97	82	90						36
37	78	97	87	98						37
38	91	98	91							38
39	98		95							39
40			97							40

Pn = 0.36
Dm = 0.01 -0.08 -0.70

TABLE 27
Mean Raw Scores for Classes to Percentile Rank
French
Grade 7

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11			1							11
12			1							12
13			2							13
14			4							14
15			6							15
16			9						3	16
17	1		12			1	1		10	17
18	2		15			1	7		20	18
19	4	1	20			1	16	3	29	19
20	6	4	27			2	24	10	39	20
21	9	8	36			4	32	19	52	21
22	14	13	42	1		6	42	29	69	22
23	19	19	49	1		9	53	39	80	23
24	27	29	55	2	1	14	67	51	87	24
25	36	42	62	4	2	18	78	65	94	25
26	44	51	68	7	4	22	85	77	98	26
27	50	61	74	11	9	28	92	86	99	27
28	59	71	79	17	16	37	97	93		28
29	67	82	86	23	24	44	99	98		29
30	73	90	90	30	34	50		99		30
31	80	93	91	40	45	58				31
32	87	97	93	48	57	69				32
33	90		97	58	73	77				33
34	93		99	71	85	84				34
35	96			81	92	90				35
36	99			89	97	93				36
37				93		97				37
38				97		99				38
39				99						39
40										40

Pn = 0.45
Dm = 2.37 3.75 2.12

TABLE 28
Mean Raw Scores for Classes to Percentile Rank
Health
Grade 7

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14			1							14
15			1							15
16			2							16
17	1	1	4							17
18	2	2	6							18
19	5	3	11						1	19
20	9	6	19			1	1	1	1	20
21	16	9	24			1	1	1	3	21
22	24	15	30		1	3	3	3	7	22
23	31	23	36		1	6	8	7	13	23
24	41	28	44	1	4	9	15	13	19	24
25	51	33	57	3	7	14	23	19	27	25
26	63	42	67	6	12	19	36	28	39	26
27	72	52	71	11	18	25	50	41	51	27
28	79	63	76	18	24	33	63	54	62	28
29	88	71	83	27	33	44	76	66	73	29
30	94	76	90	41	45	57	85	76	82	30
31	98	82	96	57	59	70	93	85	90	31
32	98	88	97	76	74	83	98	93	96	32
33	99	94	98	91	87	92		97	99	33
34		97	98	97	94	96		99		34
35		98	99		98	98				35
36		98								36
37		99								37
38										38
39										39
40										40

Pn = 0.49
Dm = 2.02 3.21 1.74

TABLE 29
Mean Raw Scores for Classes to Percentile Rank
Home Economics
Grade 7

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15			1							15
16		1	4							16
17		4	6			2				17
18		8	8			3				18
19		9	9			4		1		19
20		11	10			5		4		20
21		16	11		1	5		8	2	21
22		21	15		3	5		13	6	22
23		27	20		4	6	2	20	10	23
24		35	24		4	9	6	28	14	24
25		40	28		5	11	10	38	21	25
26	2	45	32	2	9	12	15	54	28	26
27	5	49	37	2	14	17	23	73	37	27
28	8	58	41	2	21	23	33	86	51	28
29	11	71	44	3	25	26	50	93	69	29
30	16	80	46	4	32	29	69	97	80	30
31	23	87	49	5	42	32	84	99	87	31
32	30	93	57	8	53	39	92		94	32
33	37	97	67	14	68	46	96		98	33
34	44	99	73	22	84	54	99		99	34
35	49		78	29	94	63				35
36	60		85	38	99	73				36
37	74		91	52		85				37
38	85		94	72		93				38
39	93		97	92		99				39
40	97		98							40

Pn = 0.02
Dm = 0.44 1.89 0.80

TABLE 30
Mean Raw Scores for Classes to Percentile Rank
Industrial Arts
Grade 7

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18										18
19	1									19
20	3						2			20
21	4						4			21
22	4						7			22
23	4		2				13	2	2	23
24	5		4				21	10	7	24
25	7		4				27	22	15	25
26	7		4	4			40	45	29	26
27	9		5	4		1	58	71	49	27
28	13		7	7		4	73	86	71	28
29	17	2	9	12		8	83	93	86	29
30	22	4	14	17		13	87	97	93	30
31	29	5	21	20	1	16	93	99	97	31
32	35	9	29	27	6	23	97		99	32
33	42	15	36	39	14	35	98			33
34	50	28	46	53	29	46	99			34
35	59	44	57	70	54	60				35
36	67	61	66	83	77	73				36
37	75	80	78	91	93	83				37
38	84	93	88	99		90				38
39	91	99	93			96				39
40	94		98							40

Pn = 0.93
Dm = -1.49 -2.26 -1.70

TABLE 31
Mean Raw Scores for Classes to Percentile Rank
Mathematics
Grade 7

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13			1							13
14			1							14
15		1	2							15
16		2	3						1	16
17		3	4					1	3	17
18	1	4	6					3	5	18
19	2	5	10				1	6	10	19
20	3	9	15				3	15	22	20
21	4	15	20				7	31	39	21
22	7	19	25				22	48	52	22
23	12	24	32		1	1	43	60	64	23
24	19	31	40		1	1	61	75	78	24
25	24	40	50		1	1	80	87	89	25
26	34	50	59		2	2	93	94	94	26
27	45	59	66	1	3	3	97	97	97	27
28	55	67	75	1	4	4	99	99	99	28
29	66	76	84	2	7	7	99	99	99	29
30	75	85	89	3	12	12				30
31	85	91	93	5	19	18				31
32	92	94	97	13	25	23				32
33	96	97	98	21	35	33				33
34	98	98	99	35	50	48				34
35	99	99	99	58	66	63				35
36				80	80	78				36
37				94	89	88				37
38				99	95	94				38
39					99	99				39
40										40

Pn = 0.49
Dm = 0.43 1.78 -0.20

TABLE 32
Mean Raw Scores for Classes to Percentile Rank
Music
Grade 7

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8				1						8
9				1						9
10				1						10
11				1						11
12				1						12
13				1						13
14	1		1	1						14
15	1		1	1						15
16	2		2	2						16
17	2		2	3		1				17
18	3		4	4		2				18
19	5		8	4		3				19
20	8		10	6		4			1	20
21	10		11	7		7		1	2	21
22	11	1	14	10		12	1	2	3	22
23	13	2	19	14		17	2	7	8	23
24	17	4	24	19		22	7	16	16	24
25	22	7	29	23	1	26	16	29	26	25
26	26	11	32	27	4	33	29	49	40	26
27	28	14	39	32	7	41	50	68	56	27
28	32	22	44	39	16	49	70	84	70	28
29	38	28	49	45	27	58	86	94	83	29
30	42	34	59	51	41	70	96	98	93	30
31	44	42	69	59	59	81	99		97	31
32	49	53	78	70	78	88			99	32
33	59	68	85	81	91	93				33
34	68	79	90	86	98	96				34
35	75	87	93	89		99				35
36	82	93	96	94						36
37	88	97	98	98						37
38	91	99	99							38
39	94									39
40	97									40

Pn = 0.48
Dm = 2.21 2.54 0.79

TABLE 33
Mean Raw Scores for Classes to Percentile Rank
Physical Education
Grade 7

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18										18
19										19
20			1							20
21			1			1				21
22	1	1	1			2				22
23	1	1	1			3				23
24	1	1	2			4		1	1	24
25	2	1	3	1	1	6	1	3	3	25
26	2	2	4	3	3	9	4	8	5	26
27	4	4	6	4	5	10	13	20	13	27
28	6	5	9	7	8	13	31	40	30	28
29	9	9	12	9	11	22	53	61	51	29
30	13	12	16	14	18	34	72	77	68	30
31	18	15	24	26	32	48	85	89	81	31
32	28	22	37	43	50	61	94	96	92	32
33	43	37	53	60	67	73	99	99	97	33
34	58	53	65	76	83	85			99	34
35	70	65	75	88	92	91				35
36	81	77	84	94	97	94				36
37	91	88	91	98	99	98				37
38	97	93	97	99		99				38
39		98								39
40										40

Pn = 0.49
Dm = -1.47 -0.79 -0.67

TABLE 34
Mean Raw Scores for Classes to Percentile Rank
Science
Grade 7

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15	1		1					1	1	15
16	2		2				1	2	2	16
17	5	1	5				3	3	3	17
18	10	2	10				4	7	6	18
19	15	3	15				9	15	13	19
20	20	8	19				16	22	22	20
21	25	14	23			1	24	31	31	21
22	29	18	27	1		4	35	44	44	22
23	32	22	30	4		7	50	60	60	23
24	37	26	33	8	1	10	64	75	75	24
25	43	30	38	11	4	13	77	85	86	25
26	50	33	44	14	8	16	88	92	93	26
27	57	38	50	19	12	20	93	95	96	27
28	66	44	56	25	15	26	96	97	98	28
29	75	50	63	31	20	31	98	98	99	29
30	84	57	71	42	27	39	99	99	99	30
31	93	66	80	56	35	51	99			31
32	97	74	88	69	47	65				32
33	99	82	94	83	63	77				33
34		91	97	94	79	88				34
35		96	99	98	90	95				35
36		97	99	99	96	98				36
37		99			99	99				37
38										38
39										39
40										40

Pn = 0.49
Dm = -1.29 0.26 -0.61

TABLE 35
Mean Raw Scores for Classes to Percentile Rank
Social Studies
Grade 7

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8									1	8
9									1	9
10									1	10
11			1						1	11
12			1						1	12
13		1	3						1	13
14		2	4						1	14
15		4	5						3	15
16		5	7			1			4	16
17	1	7	9			2			6	17
18	2	10	12			4		2	7	18
19	4	13	15			6	1	4	9	19
20	5	18	20			8	4	6	13	20
21	8	24	26		1	8	5	9	18	21
22	12	31	32	1	3	10	8	16	25	22
23	17	39	38	2	5	14	15	27	33	23
24	23	46	44	4	8	15	24	43	46	24
25	31	53	51	7	11	19	41	65	62	25
26	39	60	58	10	14	26	63	81	74	26
27	48	68	63	13	19	34	80	90	83	27
28	57	77	69	19	30	42	89	95	90	28
29	65	84	77	27	46	52	95	98	93	29
30	74	89	83	39	62	62	98	99	96	30
31	83	92	86	54	76	71	99		99	31
32	88	95	90	69	86	78				32
33	92	97	93	82	93	86				33
34	95	98	95	91	97	91				34
35	97	99	97	95	99	94				35
36	98	99	98	98	99	97				36
37	99		99	99	99	98				37
38	99		99	99		99				38
39			99	99		99				39
40						99				40

Pn = 0.49
Dm = 0.73 1.63 0.77

TABLE 38
Mean Raw Scores for Classes to Percentile Rank
Reading(Literature)
Grade 8

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13	1									13
14	1	1	1							14
15	2	1	1							15
16	3	2	2							16
17	3	3	3				1		1	17
18	5	3	4				2	1	2	18
19	9	6	7				3	2	2	19
20	12	12	12				4	3	3	20
21	16	16	16				6	5	5	21
22	22	23	22				11	11	11	22
23	30	32	31	1	1	2	18	20	18	23
24	41	44	43	3	4	4	25	33	28	24
25	51	60	59	6	8	8	37	55	46	25
26	61	70	69	9	13	13	53	75	67	26
27	70	80	77	13	19	19	69	88	81	27
28	80	90	87	18	28	26	81	96	90	28
29	88	95	93	24	45	41	90	98	97	29
30	93	97	97	36	64	58	96		99	30
31	96	99	98	53	78	72	98			31
32	97		99	68	86	83				32
33	99			78	93	91				33
34				86	98	97				34
35				91						35
36				97						36
37										37
38										38
39										39
40										40

Pn = 0.51
Dm = 1.82 2.10 1.26

TABLE 37
Mean Raw Scores for Classes to Percentile Rank
Language(Composition)
Grade 8

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14	1		1							14
15	1		1							15
16	2		2				1			16
17	3	1	3				3		2	17
18	4	2	5				6	1	5	18
19	7	4	9				11	3	10	19
20	11	7	14				16	6	16	20
21	14	11	21				25	11	27	21
22	20	18	32				39	18	43	22
23	29	29	42	1			54	31	59	23
24	38	44	54	1		1	68	47	75	24
25	48	57	66	1		1	79	62	85	25
26	57	69	75	3	1	3	87	76	93	26
27	67	79	84	8	1	6	93	85	98	27
28	75	87	90	13	3	11	98	93	99	28
29	81	93	94	18	8	18	99	98	99	29
30	87	97	97	27	15	26	99	99		30
31	92	99	99	41	26	39	99	99		31
32	95	99	99	55	42	53				32
33	97	99	99	67	60	65				33
34	98	99	99	79	77	78				34
35	99			90	91	90				35
36	99			96	98	96				36
37	99			99		99				37
38	99									38
39										39
40										40

Pn = 0.51

Dm = 2.13 2.25 1.60

TABLE 38
Mean Raw Scores for Classes to Percentile Rank
Art
Grade 8

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8				1						8
9			1	1		1				9
10	1	1	1	1		1				10
11	1	1	1	1		1				11
12	1	1	1	2	1	1				12
13	1	1	1	2	1	1				13
14	1	1	1	2	1	2				14
15	1	2	2	2	1	3				15
16	2	3	3	2	1	4				16
17	3	3	3	3	2	5				17
18	3	4	4	4	4	6		1		18
19	3	6	6	5	5	9		2		19
20	4	10	11	6	7	15		4	1	20
21	6	17	17	7	12	21	1	5	2	21
22	10	22	22	10	18	31	2	9	3	22
23	17	27	27	16	28	40	4	17	4	23
24	22	34	35	19	40	47	8	27	8	24
25	27	43	43	28	48	56	16	41	15	25
26	32	51	51	38	58	67	30	55	25	26
27	39	61	61	45	71	78	51	69	39	27
28	47	68	68	54	82	84	71	82	53	28
29	55	75	73	63	91	92	87	93	68	29
30	64	85	83	73	96	97	96	97	82	30
31	69	93	92	83	98	98	99	99	93	31
32	74	97	96	90	99	99			97	32
33	83	98	98	96					99	33
34	91	98	98	99						34
35	95	98	98							35
36	98	98	98							36
37	98	99	99							37
38	98									38
39	98									39
40	98									40

Pn = 0.52
Dm = 1.03 1.19 0.58

TABLE 39
Mean Raw Scores for Classes to Percentile Rank
Drama
Grade 8

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16			1							16
17			2							17
18			3			2				18
19	1		5			4				19
20	2	1	7		2	11		1	1	20
21	4	3	9	2	10	16	1	2	2	21
22	7	5	13	4	16	21	3	3	3	22
23	8	9	16	10	21	25	4	7	5	23
24	10	13	20	15	26	29	8	16	8	24
25	14	17	25	18	35	37	17	28	16	25
26	18	24	29	23	52	49	28	38	25	26
27	22	33	36	28	69	66	42	55	33	27
28	26	42	46	36	80	79	60	73	46	28
29	33	52	52	47	88	84	76	84	60	29
30	39	61	57	64	93	90	86	93	75	30
31	47	71	65	77	96	94	94	98	84	31
32	55	82	71	81	98	97	98		90	32
33	61	91	79	88					94	33
34	67	94	88	93					98	34
35	73	96	92	97						35
36	83	97	94							36
37	90	97	96							37
38	93	98	97							38
39	95		97							39
40	96		97							40

Pn = 0.41
Dm = 3.91 4.07 1.98

TABLE 40
Mean Raw Scores for Classes to Percentile Rank
French
Grade 8

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9			1							9
10			1							10
11		1	2							11
12	1	2	4				1	1	1	12
13	2	4	5				2	2	2	13
14	4	6	8				4	4	4	14
15	5	9	11				6	6	6	15
16	8	14	15				11	9	10	16
17	13	18	17				17	14	15	17
18	16	23	19				27	25	25	18
19	19	31	24			1	38	36	36	19
20	24	41	31			3	49	46	46	20
21	31	53	37		1	6	63	59	59	21
22	39	68	44	1	4	9	78	73	73	22
23	49	79	54	4	8	11	86	83	83	23
24	64	86	66	7	11	15	91	89	89	24
25	75	89	75	9	16	21	95	94	94	25
26	83	92	82	14	24	27	97	97	97	26
27	88	96	87	20	29	34	98	98	98	27
28	89	99	89	24	39	43	99	99	99	28
29	92		91	30	51	52				29
30	94		93	40	62	62				30
31	97		94	51	70	69				31
32			97	62	81	78				32
33			99	69	91	87				33
34				79	94	92				34
35				89	97	94				35
36				93		97				36
37				96		99				37
38				99						38
39										39
40										40

Pn = 0.43
Dm = 2.02 4.09 2.10

TABLE 41
Mean Raw Scores for Classes to Percentile Rank
Health
Grade 8

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10	1		1							10
11	1		1							11
12	3		4			1				12
13	7	1	7			1				13
14	9	1	9			1				14
15	9	5	9			2				15
16	12	9	12	1	1	3				16
17	16	9	18	1	1	5				17
18	21	12	24	1	2	7			1	18
19	27	19	29	2	3	8	3		3	19
20	33	27	36	5	5	11	7		7	20
21	40	34	43	7	7	16	13		10	21
22	47	43	51	9	10	21	21		14	22
23	53	51	59	13	17	23	29	1	20	23
24	62	61	66	19	23	32	39	3	26	24
25	69	70	76	23	31	41	55	10	32	25
26	77	80	85	32	41	47	73	19	39	26
27	85	89	89	41	49	55	88	27	50	27
28	89	93	93	49	63	69	97	37	63	28
29	92	95	94	63	77	79		53	75	29
30	93	96	95	77	85	85		74	85	30
31	95	98	97	85	92	89		89	93	31
32	97		99	89	95	93		97	97	32
33	99			93	97	96				33
34				96	98	97				34
35				97	99	98				35
36				98		98				36
37				99		99				37
38										38
39										39
40										40

Pn = 0.49
Dm = 1.23 3.12 1.37

TABLE 42
Mean Raw Scores for Classes to Percentile Rank
Home Economics
Grade 8

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10		1								10
11		2								11
12		3								12
13		5								13
14		8								14
15		11			1					15
16		14			2					16
17		16	2		3					17
18		19	4		3					18
19		22	7		4	1				19
20	1	23	10		5	2				20
21	2	25	13		5	3	1			21
22	5	28	16		8	4	2	2	1	22
23	10	33	19		11	5	6	7	2	23
24	14	38	22		14	5	14	16	8	24
25	18	42	23	1	18	8	23	26	18	25
26	22	47	26	3	22	11	30	38	27	26
27	23	52	32	4	25	15	41	52	39	27
28	26	61	38	5	29	20	55	69	53	28
29	32	70	44	9	36	24	68	85	69	29
30	40	76	50	15	44	27	81	94	85	30
31	46	80	57	21	50	33	90	96	94	31
32	53	86	68	29	57	41	95	97	96	32
33	66	91	76	40	65	49	96	99	97	33
34	77	95	81	53	75	56	97		99	34
35	84	97	88	68	85	66	99			35
36	91	98	93	83	92	77				36
37	95	98	96	93	94	87				37
38	97	99	98	97	96	92				38
39	99		99		99	96				39
40						99				40

Pn = 0.08
Dm = 1.20 2.74 0.88

TABLE 43
Mean Raw Scores for Classes to Percentile Rank
Industrial Arts
Grade 8

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15			1							15
16			1							16
17			2							17
18			3			1				18
19			4			2			1	19
20			5			3			2	20
21	1		6			4	2	1	3	21
22	3		8			4	4	2	5	22
23	4		9	1		5	9	6	9	23
24	4		10	2		6	18	13	16	24
25	6		12	3		6	32	26	28	25
26	8	2	15	3	1	6	54	44	42	26
27	9	4	19	4	2	9	73	64	58	27
28	12	6	26	5	4	15	86	82	75	28
29	16	8	34	7	5	23	93	92	87	29
30	24	11	42	15	6	28	97	96	93	30
31	34	15	49	24	13	34	98	98	96	31
32	43	27	56	33	23	45	99	99	98	32
33	52	42	61	44	35	55			99	33
34	60	53	68	58	50	64				34
35	69	66	77	70	67	73				35
36	80	79	83	81	81	81				36
37	89	90	90	91	92	89				37
38	96	97	95	96	98	95				38
39	98	99	97	99	99	99				39
40	99		98	99						40

Pn = 0.88
Dm = 0.02 -1.31 -0.17

TABLE 44
Mean Raw Scores for Classes to Percentile Rank
Mathematics
Grade 8

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11	1		1							11
12	1		1							12
13	2		2						1	13
14	2		2						2	14
15	2	1	2				1		3	15
16	3	2	3				2	2	4	16
17	5	2	6				3	3	8	17
18	8	3	10				5	6	14	18
19	12	6	15				10	14	21	19
20	16	10	19	1		1	18	26	32	20
21	20	17	24	1		1	28	41	47	21
22	25	24	30	1	1	1	41	62	63	22
23	31	32	37	1	1	1	58	83	80	23
24	38	42	43	1	1	1	76	95	91	24
25	44	53	53	2	1	2	88	98	96	25
26	53	66	62	2	2	2	95		98	26
27	61	76	69	3	2	2	98			27
28	69	86	77	4	3	3				28
29	76	94	83	7	4	4				29
30	82	97	90	11	7	7				30
31	89	98	95	17	11	11				31
32	94	99	97	27	20	18				32
33	97	99	98	41	35	30				33
34	98		99	57	52	44				34
35	98		99	71	69	59				35
36	99		99	83	87	74				36
37	99			94	97	88				37
38	99			98	99	97				38
39				99		99				39
40										40

Pn = 0.50

Dm = -0.28 1.37 -0.87

TABLE 45
Mean Raw Scores for Classes to Percentile Rank
Music
Grade 8

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9		1								9
10		2								10
11		2	1							11
12		2	2							12
13		3	2							13
14	1	6	3		1					14
15	2	10	5		2	1				15
16	2	14	7		6	2				16
17	3	18	11		11	5		1		17
18	5	22	16	1	13	10		2	1	18
19	7	26	20	4	18	13	1	3	2	19
20	12	28	24	9	24	18	3	4	3	20
21	18	29	27	12	27	24	7	6	7	21
22	21	34	28	17	33	27	16	10	11	22
23	25	45	31	24	43	33	29	12	17	23
24	28	53	43	27	50	43	45	18	27	24
25	30	55	52	33	54	50	63	29	36	25
26	38	59	54	43	63	54	78	37	47	26
27	48	67	59	50	73	65	86	45	61	27
28	53	73	67	55	80	76	92	58	75	28
29	58	77	73	65	85	81	96	69	81	29
30	65	79	77	76	89	86	98	76	85	30
31	72	85	79	83	93	90		82	88	31
32	77	93	85	89	97	93		85	92	32
33	79	95	93	93		97		88	96	33
34	85	97	95	97				90	97	34
35	93		97					93	98	35
36	97							96		36
37								97		37
38								98		38
39										39
40										40

Pn = 0.50
Dm = 2.57 2.74 2.30

TABLE 46
Mean Raw Scores for Classes to Percentile Rank
Physical Education
Grade 8

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18										18
19										19
20										20
21							1	1	1	21
22							2	1	1	22
23		1		1	1	1	3	2	2	23
24	1	3	2	2	2	2	5	3	4	24
25	3	4	3	2	2	2	10	4	6	25
26	4	7	5	4	7	6	22	6	10	26
27	7	13	10	11	19	15	37	13	20	27
28	13	22	17	20	32	27	60	24	32	28
29	22	34	28	31	46	40	82	37	48	29
30	34	46	41	43	60	53	94	53	69	30
31	44	55	50	53	72	65	99	74	86	31
32	52	64	60	64	83	75	99	89	96	32
33	61	75	68	73	92	84		96	99	33
34	71	87	78	83	96	92		99	99	34
35	81	94	89	91	99	96		99		35
36	90	98	96	95		99				36
37	96		99	98						37
38	99			99						38
39										39
40										40

Pn = 0.51
Dm = -0.03 0.33 0.06

TABLE 47
Mean Raw Scores for Classes to Percentile Rank
Science
Grade 8

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13	1	1	1							13
14	2	2	2				1	1	1	14
15	2	3	3				2	3	2	15
16	4	4	4				3	8	6	16
17	5	7	6		1		7	16	12	17
18	7	12	8		1	1	12	26	19	18
19	9	18	14	1	2	1	18	40	30	19
20	14	25	20	1	3	2	28	58	45	20
21	20	31	27	3	6	4	38	74	62	21
22	26	40	34	5	8	6	50	84	75	22
23	31	50	42	7	11	8	64	93	84	23
24	38	58	51	10	14	12	75	98	93	24
25	47	66	59	13	18	17	82		97	25
26	53	73	66	17	25	21	89		98	26
27	60	79	72	21	35	30	95			27
28	67	87	78	30	48	42	97			28
29	72	91	85	44	61	53	99			29
30	77	95	91	55	70	65				30
31	83	97	95	66	79	74				31
32	89	99	97	76	88	83				32
33	93	99	98	85	95	92				33
34	95		99	93	98	97				34
35	97			97	99	99				35
36	99			99						36
37	99									37
38										38
39										39
40										40

Pn = 0.49

Dm = -1.70 0.0 -1.34

TABLE 48
Mean Raw Scores for Classes to Percentile Rank
Social Studies
Grade 8

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9		1			1					9
10		2			1					10
11		2	1		1					11
12		5	2		2			1		12
13		6	2		3	1		2		13
14		7	5		3	1		4	2	14
15	1	8	7		4	1		5	3	15
16	2	9	8		5	2	1	8	5	16
17	5	14	10		6	3	3	11	8	17
18	7	18	13		7	4	5	14	12	18
19	9	23	18		10	5	9	20	16	19
20	12	28	24		12	6	14	27	23	20
21	19	32	29	1	14	9	21	39	32	21
22	26	36	33	2	17	12	32	53	46	22
23	32	45	40	3	23	14	48	64	62	23
24	40	53	50	5	30	19	64	72	72	24
25	51	59	57	8	36	26	74	78	77	25
26	60	64	62	12	41	33	83	86	85	26
27	68	69	69	19	48	40	91	92	92	27
28	75	74	74	30	52	48	96	95	95	28
29	80	77	78	42	56	53	98	97	97	29
30	84	81	83	52	65	61	99	98	98	30
31	88	84	85	66	74	72		99	99	31
32	92	86	88	81	80	79				32
33	95	90	92	89	84	84				33
34	97	93	94	95	88	90				34
35	99	94	95	98	91	94				35
36		96	97		94	97				36
37		97	98		97	98				37
38		97	99		98					38
39		99								39
40										40

Pn = 0.49
Dm = -0.58 1.25 -1.17

TABLE 49
Mean Raw Scores for Classes to Percentile Rank
Reading(Literature)
Grade 9

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15	1									15
16	2	1	1							16
17	3	2	3					1		17
18	4	3	4					2	1	18
19	5	5	5				1	3	2	19
20	5	6	5		1		2	5	5	20
21	9	10	10		1	1	5	8	7	21
22	15	20	15		3	1	8	12	13	22
23	25	35	27		5	2	16	20	22	23
24	38	48	42	1	6	3	28	29	36	24
25	49	59	52	1	10	5	43	39	52	25
26	58	70	62	3	17	8	60	52	68	26
27	67	78	71	6	30	14	76	64	80	27
28	73	86	78	12	44	26	88	75	89	28
29	80	93	86	27	57	40	95	83	95	29
30	88	97	92	44	71	54	98	90	98	30
31	93	99	96	60	82	67	99	95	99	31
32	96		98	79	88	79	99	98	99	32
33	99			89	92	88		99		33
34				94	96	91		99		34
35				99	99	95		99		35
36						99				36
37										37
38										38
39										39
40										40

Pn = 0.48
Dm = 2.91 2.92 1.49

TABLE 50
Mean Raw Scores for Classes to Percentile Rank
Language(Composition)
Grade 9

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13			1							13
14			2							14
15	1	1	3					1	1	15
16	3	3	4				1	2	2	16
17	4	4	5				2	4	4	17
18	5	5	7				4	7	8	18
19	7	8	12				8	10	12	19
20	12	15	19			1	15	16	20	20
21	20	23	27			1	29	27	35	21
22	29	32	35	1		2	47	41	51	22
23	40	43	45	1		2	65	55	69	23
24	52	55	55	2		3	80	70	83	24
25	63	66	65	2	1	4	90	83	91	25
26	73	76	74	3	2	8	95	90	94	26
27	82	85	81	6	2	11	98	93	97	27
28	88	90	87	10	5	15	99	96	99	28
29	92	93	90	15	10	21	99	98	99	29
30	96	96	93	23	16	28		99	99	30
31	97	97	96	34	26	41		99		31
32	98	98	97	50	44	56		99		32
33	99	99	98	66	64	68				33
34			99	81	82	80				34
35				91	94	89				35
36				96	98	94				36
37				99	99	98				37
38				99	99	99				38
39				99		99				39
40						99				40

Pn = 0.49
Dm = 2.63 3.28 2.00

TABLE 51
Mean Raw Scores for Classes to Percentile Rank
Art
Grade 9

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16						1				16
17	1	1	1			2				17
18	4	6	5		1	3				18
19	8	12	10	1	2	7				19
20	12	15	14	2	7	15			1	20
21	15	19	17	6	17	21			2	21
22	18	25	20	16	25	25	1		3	22
23	23	30	24	25	37	31	3	1	4	23
24	28	37	29	30	47	39	5	3	8	24
25	34	49	35	39	54	47	12	11	15	25
26	39	57	41	48	67	50	26	27	21	26
27	49	64	50	54	80	56	45	52	29	27
28	57	71	57	65	90	65	69	79	42	28
29	61	75	64	75	96	74	91	95	58	29
30	67	80	71	84	99	81	99		75	30
31	72	87	75	92		88			85	31
32	76	94	80	97		94			93	32
33	80	98	84	99		97			99	33
34	86		89			98				34
35	93		95			99				35
36	98		99							36
37										37
38										38
39										39
40										40

Pn = 0.52

Dm = 1.84 2.72 0.59

TABLE 52
Mean Raw Scores for Classes to Percentile Rank
Drama
Grade 9

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16						2				16
17						5				17
18			2			5				18
19			5			5				19
20			7		2	11				20
21			11		9	23				21
22			14	2	20	30	5			22
23		2	16	5	30	32	9		5	23
24		9	20	5	39	32	9		9	24
25		16	25	11	52	39	14		9	25
26		25	34	23	72	52	25		14	26
27		41	43	30	88	59	41	5	25	27
28		52	48	32	90	68	56	20	39	28
29	5	68	52	39	95	84	70	48	50	29
30	11	86	54	52		90	84	77	61	30
31	18	95	61	65		90	93	95	77	31
32	32		75	77		90	97		88	32
33	48		84	86		90			93	33
34	61		88	90		95			97	34
35	77		95	90						35
36	93			95						36
37										37
38										38
39										39
40										40

Pn = 0.41
Dm = 3.11 3.09 1.10

TABLE 53
Mean Raw Scores for Classes to Percentile Rank
French
Grade 9

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11	1									11
12	2									12
13	4									13
14	8		1							14
15	12	1	2				3		2	15
16	18	4	4				10	3	7	16
17	24	10	9				18	9	13	17
18	30	16	13			1	34	17	24	18
19	34	23	20	1		2	53	30	39	19
20	40	31	27	2		2	66	43	53	20
21	47	38	32	2		2	81	54	65	21
22	55	49	39	3	1	3	91	65	74	22
23	63	61	46	4	2	4	94	74	84	23
24	72	72	54	4	3	6	96	83	92	24
25	81	82	64	7	4	8	98	91	94	25
26	86	88	75	11	7	12		93	96	26
27	91	94	84	20	13	21		94	97	27
28	94	97	87	30	26	30		96	98	28
29	96	98	92	38	40	38		98		29
30	97		96	49	53	48				30
31	98		97	57	68	56				31
32			98	68	84	65				32
33				84	94	79				33
34				92	98	89				34
35				95		92				35
36				98		95				36
37						98				37
38										38
39										39
40										40

Pn = 0.41
Dm = 2.01 2.66 0.92

TABLE 54
Mean Raw Scores for Classes to Percentile Rank
Guidance 9
Grade 9

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10	1	1	1							10
11	1	1	1							11
12	1	1	1		1	1				12
13	2	3	3		1	1				13
14	4	6	5	1	1	1				14
15	6	9	8	1	1	1				15
16	9	14	12	1	1	1				16
17	12	21	17	1	1	1				17
18	16	27	25	1	2	2	1			18
19	23	34	31	2	3	4	1			19
20	29	39	36	3	4	6	1		1	20
21	33	44	41	4	6	8	2		1	21
22	37	52	47	6	7	11	3	1	2	22
23	41	59	54	9	11	14	4	2	3	23
24	46	65	62	13	13	17	6	3	5	24
25	52	73	67	16	16	22	12	5	7	25
26	58	79	74	20	20	25	20	10	14	26
27	62	82	79	23	23	30	29	20	25	27
28	67	85	82	28	27	40	39	34	35	28
29	73	89	85	34	33	50	52	53	47	29
30	78	92	88	45	43	60	66	74	63	30
31	82	95	92	56	52	69	79	87	76	31
32	84	97	95	65	60	77	89	96	87	32
33	86	98	97	75	69	84	95	99	94	33
34	88	99	98	81	76	88	98		98	34
35	91		99	87	82	93	99		99	35
36	94			92	87	98				36
37	96			96	91	99				37
38	97			98	95					38
39	98			99	98					39
40	99				99					40

Pn = 0.48
Dm = 1.77 3.05 1.28

TABLE 55
Mean Raw Scores for Classes to Percentile Rank
Health
Grade 9

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15	5									15
16	9		5							16
17	14		14							17
18	23		23							18
19	32	5	32	2		2				19
20	36	14	41	5		5				20
21	43	25	52	5		5		2		21
22	54	39	61	5		11	2	11	2	22
23	61	54	63	11		23	14	30	7	23
24	63	63	68	23	2	32	36	48	20	24
25	65	68	75	30	5	41	54	59	41	25
26	70	75	77	39	5	48	61	68	54	26
27	72	77	77	48	14	52	68	75	61	27
28	75	84	79	50	27	54	75	79	68	28
29	77	95	90	52	39	65	79	90	75	29
30	77			59	48	79	90		79	30
31	79			72	52	86			86	31
32	86			81	68	90			95	32
33	95			86	84	95				33
34				93	88					34
35				97	95					35
36										36
37										37
38										38
39										39
40										40

Pn = 0.48
Dm = 4.05 5.99 1.25

TABLE 56
Mean Raw Scores for Classes to Percentile Rank
Home Economics
Grade 9

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15			1							15
16	1		3							16
17	3		8							17
18	6		12							18
19	10	1	15							19
20	13	4	17							20
21	16	8	17	1		1	1		1	21
22	17	13	20	3		3	3		2	22
23	19	16	23	4		5	6		4	23
24	21	17	27	6		8	15		8	24
25	24	20	30	9	1	11	28	2	17	25
26	29	23	35	12	3	12	37	10	26	26
27	33	28	41	13	6	17	50	25	34	27
28	38	31	46	17	9	21	67	43	43	28
29	44	37	49	21	12	24	78	65	55	29
30	48	45	58	24	17	31	90	85	68	30
31	54	49	73	31	21	40	98	96	78	31
32	67	58	81	39	25	47	99		86	32
33	78	73	87	46	34	57			94	33
34	82	81	94	55	42	71			98	34
35	89	89	98	68	53	85			99	35
36	97	97		78	69	94				36
37				89	84	99				37
38				98	94					38
39					99					39
40										40

Pn = 0.09
Dm = 7.52 8.91 3.40

TABLE 57
Mean Raw Scores for Classes to Percentile Rank
Industrial Arts
Grade 9

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10			1							10
11			3			1				11
12			4			1			1	12
13			8			1			1	13
14			12			1			1	14
15			13			3			1	15
16			14			5	1	1	1	16
17			15			8	1	1	1	17
18			16			11	1	1	1	18
19			17			13	1	1	1	19
20			19			15	1	1	2	20
21			22			16	1	2	6	21
22	1		23	1		17	2	6	10	22
23	3		27	1		17	6	13	17	23
24	8		32	2	1	19	15	26	28	24
25	13	2	35	5	3	25	28	47	38	25
26	15	9	39	10	7	31	45	70	53	26
27	16	15	43	14	13	34	65	87	70	27
28	19	19	48	16	16	36	82	95	81	28
29	24	30	52	17	19	40	93	98	90	29
30	31	44	59	23	28	47	97	99	95	30
31	38	61	68	31	38	55	98		98	31
32	45	84	74	36	51	64	99		98	32
33	54	97	78	44	70	73			99	33
34	65		85	59	89	84				34
35	77		93	73		93				35
36	89		96	88		97				36
37	97		98	98						37
38										38
39										39
40										40

Pn = 0.90
Dm = -3.26 -3.02 -1.40

TABLE 58
Mean Raw Scores for Classes to Percentile Rank
Mathematics
Grade 9

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13	1									13
14	1		1					2	1	14
15	2	1	2					6	4	15
16	3	2	3				1	13	11	16
17	5	3	4				4	24	20	17
18	7	5	7				12	36	31	18
19	11	7	10				22	50	44	19
20	13	11	14				33	63	57	20
21	19	15	20				46	75	69	21
22	27	23	29				59	83	78	22
23	35	32	38				70	89	87	23
24	42	41	46				81	95	92	24
25	49	50	53				89	99	96	25
26	54	55	59	1			94		99	26
27	59	62	67	3			98			27
28	67	71	76	5		2	99			28
29	75	81	84	9		5				29
30	83	88	90	16		9				30
31	88	91	93	24	1	15				31
32	91	95	96	34	4	25				32
33	94	98	99	46	12	38				33
34	97			57	25	51				34
35	99			69	45	63				35
36				82	68	78				36
37				93	88	92				37
38				98	99	98				38
39										39
40										40

Pn = 0.49			
Dm =	-0.03	1.02	-0.84

TABLE 59
Mean Raw Scores for Classes to Percentile Rank
Music
Grade 9

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12		1								12
13		3	1							13
14		4	3							14
15		7	4			1				15
16		10	7			6				16
17	1	11	10		4	10	1	1		17
18	3	14	11		9	11	3	4		18
19	6	20	13		10	14	4	7		19
20	10	24	19	4	16	19	7	19		20
21	11	29	23	10	24	24	14	31	1	21
22	17	31	24	13	29	29	24	41	4	22
23	23	34	29	17	33	31	31	55	7	23
24	26	40	31	24	43	36	39	67	16	24
25	30	49	33	29	54	41	44	77	29	25
26	34	61	36	31	65	50	52	89	39	26
27	41	69	41	39	78	57	61	98	50	27
28	51	72	51	47	89	64	67		61	28
29	62	82	62	55	95	77	74		68	29
30	71	92	69	65	97	88	79		77	30
31	82	94	72	78	97	92	88		89	31
32	92	95	79	88	98	94	95		98	32
33	94	98	88	92		95	98			33
34	95		92	95		97				34
35	98		94	97		97				35
36			95	98		98				36
37			98							37
38										38
39										39
40										40

Pn = 0.42
Dm = 4.35 3.20 0.69

TABLE 60
Mean Raw Scores for Classes to Percentile Rank
Physical Education
Grade 9

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18										18
19	1									19
20	1		1	1						20
21	1		1	2		1				21
22	2		1	4		2				22
23	3		2	7		4	1			23
24	7		3	11	1	7	4		1	24
25	12		7	15	3	11	12	1	3	25
26	17		14	20	6	15	24	5	10	26
27	20	1	19	27	10	22	38	17	23	27
28	25	1	24	36	16	31	53	39	39	28
29	33	6	31	46	24	42	67	59	54	29
30	43	14	40	57	35	54	79	75	69	30
31	53	22	52	67	47	65	87	88	82	31
32	64	33	63	77	60	76	93	95	90	32
33	71	50	71	86	72	86	97	99	95	33
34	79	67	79	91	83	93	99		98	34
35	86	81	88	95	92	97				35
36	92	93	95	99	97	99				36
37	97	99	98		99					37
38										38
39										39
40										40

Pn = 0.50
Dm = 0.49 0.70 -0.16

TABLE 61
Mean Raw Scores for Classes to Percentile Rank
Science
Grade 9

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11			1					1	1	11
12			3				1	1	1	12
13			3				1	1	1	13
14			4				1	4	5	14
15	1		6				4	12	13	15
16	3		8				10	22	22	16
17	4	1	11			1	19	30	30	17
18	7	3	15			2	28	40	39	18
19	11	5	20			3	39	56	55	19
20	16	8	24			4	55	69	68	20
21	24	11	29	1	1	5	67	78	76	21
22	31	17	34	3	3	6	75	87	85	22
23	39	24	39	4	4	7	85	94	93	23
24	48	31	47	5	5	10	93	98	97	24
25	59	38	54	8	6	13	97	99	98	25
26	70	47	60	13	8	17	98		99	26
27	80	56	67	21	13	24	99			27
28	87	66	73	33	18	33				28
29	92	77	80	48	27	43				29
30	95	84	86	63	39	51				30
31	97	90	89	79	51	62				31
32	98	94	92	91	63	72				32
33	99	96	94	98	76	81				33
34		98	96		87	88				34
35		99	97		94	94				35
36			98		98	98				36
37			99			99				37
38			99							38
39										39
40										40

Pn = 0.49

Dm =	-2.49	-0.21	-1.94

TABLE 62
Mean Raw Scores for Classes to Percentile Rank
Social Studies
Grade 9

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14	2	1					1		1	14
15	4	3	2		1		1		1	15
16	7	5	4	1	1		1	1	1	16
17	11	7	7	2	2	1	3	1	2	17
18	16	11	11	3	3	2	7	3	4	18
19	19	15	16	3	3	3	15	7	8	19
20	23	19	21	5	5	4	29	14	13	20
21	29	22	25	7	7	6	46	28	24	21
22	36	26	32	11	8	8	60	46	36	22
23	44	32	40	15	12	12	73	61	50	23
24	50	40	48	19	16	17	83	75	62	24
25	55	46	54	25	19	21	89	84	71	25
26	59	51	58	36	25	30	94	89	79	26
27	67	55	65	45	34	42	98	95	85	27
28	76	59	74	51	44	49		99	90	28
29	82	67	81	62	49	57			94	29
30	87	75	87	72	56	68			98	30
31	91	80	90	81	65	76				31
32	95	84	95	90	72	84				32
33	98	88	98	95	80	92				33
34	99	93	99	97	88	95				34
35		97		99	93	98				35
36		98		99	95	99				36
37		99			98	99				37
38					99					38
39					99					39
40										40

Pn = 0.49
Dm = 0.20 2.02 -0.42

TABLE 63
Mean Raw Scores for Classes to Percentile Rank
Typing
Grade 9

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18			6							18
19			14							19
20			20							20
21			26			1				21
22			30			3			1	22
23			34			4	3		9	23
24			41			6	16	10	20	24
25	4		50			6	33	29	33	25
26	14	9	55	1		9	49	46	47	26
27	23	23	61	3		13	62	61	58	27
28	29	31	68	4		17	74	78	69	28
29	34	41	79	7		21	85	94	82	29
30	43	54	91	11	1	29	95		91	30
31	52	65	94	17	4	37			97	31
32	61	82	95	26	13	49				32
33	71	94	97	37	33	59				33
34	85	95	98	51	67	71				34
35	94	98		71	94	85				35
36	95			88		94				36
37	98			97		98				37
38										38
39										39
40										40

Pn = 0.42
Dm = 6.57 7.21 2.55

TABLE 64
Mean Raw Scores for Classes to Percentile Rank
Biology 10
Grade 10

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13									1	13
14	1							2	7	14
15	1		1				2	9	13	15
16	1	1	1				9	14	15	16
17	2	1	2				15	18	19	17
18	4	2	4				19	21	22	18
19	7	4	7	1	1		22	26	26	19
20	13	11	13	1	1		29	35	39	20
21	18	18	18	1	1		44	50	56	21
22	24	24	25	1	1	1	61	65	72	22
23	31	32	32	2	3	1	79	79	84	23
24	36	38	39	4	4	1	92	91	93	24
25	41	44	46	5	5	3	97	96	97	25
26	46	52	53	8	10	5	98	98	98	26
27	53	65	62	19	21	10				27
28	62	74	71	32	34	24				28
29	71	83	82	43	45	42				29
30	79	91	90	52	57	54				30
31	86	94	94	63	73	70				31
32	91	97	97	78	87	87				32
33	94	99	98	91	94	95				33
34	97		99	97	99	99				34
35	98			99						35
36	99									36
37										37
38										38
39										39
40										40

Pn = 0.45
Dm = 1.30 2.33 0.37

TABLE 65
Mean Raw Scores for Classes to Percentile Rank
Chemistry 10
Grade 10

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12								1		12
13							1	1	1	13
14							1	1	1	14
15							1	1	1	15
16			1				3	6	5	16
17			4				8	11	10	17
18			6				14	17	16	18
19		1	9				21	29	28	19
20	1	4	12				31	41	41	20
21	5	7	17				48	55	55	21
22	9	11	27				63	71	74	22
23	12	15	35				77	83	86	23
24	20	22	44		1	1	89	89	92	24
25	32	33	57		3	3	93	94	96	25
26	44	44	65		7	9	96	97	97	26
27	57	57	73	1	13	17	97	97	99	27
28	69	65	84	6	21	29	99	99		28
29	80	75	91	17	35	45				29
30	89	86	94	36	48	61				30
31	95	92	97	60	61	80				31
32	99	96	99	83	78	92				32
33		99		97	90	97				33
34				99	97	99				34
35					99					35
36										36
37										37
38										38
39										39
40										40

Pn = 0.48
Dm = -0.68 0.17 -1.20

TABLE 88
Mean Raw Scores for Classes to Percentile Rank
English 10
Grade 10

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15			1							15
16			1						1	16
17	1		2				1	1	2	17
18	1	1	4				2	2	3	18
19	3	2	8				3	3	8	19
20	6	4	12				10	9	15	20
21	9	8	17				20	18	23	21
22	14	15	23				33	30	34	22
23	22	24	28				49	46	48	23
24	28	33	34				67	61	61	24
25	36	46	45			1	83	76	75	25
26	47	60	56			3	94	88	86	26
27	58	75	64		3	6	98	95	93	27
28	69	86	74	3	6	11	99	99	97	28
29	79	91	83	6	13	18			99	29
30	86	95	87	13	22	27				30
31	91	98	91	24	32	37				31
32	94		94	37	47	50				32
33	97		97	52	61	63				33
34	99		98	67	75	76				34
35				83	89	88				35
36				95	96	94				36
37				99	99	98				37
38										38
39										39
40										40

Pn = 0.46
Dm = 2.61 3.68 1.46

TABLE 67
Mean Raw Scores for Classes to Percentile Rank
English 13
Grade 10

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17			1							17
18	1		4							18
19	4	3	8					1	1	19
20	7	7	11					2	1	20
21	11	12	15				1	6	6	21
22	16	18	19				6	13	12	22
23	22	24	24				14	18	17	23
24	29	34	31	1		3	24	25	25	24
25	42	49	44	4		6	41	36	34	25
26	57	64	54	7	4	8	62	51	50	26
27	69	77	64	9	8	13	78	66	66	27
28	79	87	75	16	15	19	92	77	77	28
29	88	94	84	26	29	29	99	85	85	29
30	94	96	91	41	51	46		93	93	30
31	96	98	94	59	76	62		99	99	31
32	97		96	77	91	77				32
33	99		97	87	96	87				33
34			99	92	98	92				34
35				96		95				35
36				98		97				36
37										37
38										38
39										39
40										40

Pn = 0.61
Dm = 2.28 3.10 1.22

TABLE 68
Mean Raw Scores for Classes to Percentile Rank
French 10
Grade 10

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12	1									12
13	2									13
14	2									14
15	4									15
16	5		1					1	1	16
17	7		2				1	5	4	17
18	12		4				5	13	9	18
19	18	1	5				13	24	16	19
20	22	2	7				24	33	26	20
21	24	4	15				33	48	38	21
22	30	7	21				48	68	57	22
23	38	16	28				67	80	75	23
24	46	24	37				79	90	82	24
25	54	33	45			1	89	98	92	25
26	60	48	56	1		5	97			26
27	67	59	62	5		9				27
28	71	68	68	9	1	12				28
29	75	76	75	13	5	16				29
30	79	87	80	20	10	22				30
31	84	95	89	26	15	34				31
32	91	96	95	38	22	48				32
33	95	98	96	52	39	59				33
34	96		97	65	59	71				34
35	97		98	81	79	86				35
36	97			93	95	96				36
37	98			98		98				37
38										38
39										39
40										40

Pn = 0.36
Dm = 2.63 3.10 1.01

TABLE 69
Mean Raw Scores for Classes to Percentile Rank
Mathematics 10
Grade 10

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11	1									11
12	1									12
13	1		1					1		13
14	1	1	1					4	1	14
15	1	1	1				1	7	4	15
16	2	1	1				3	12	7	16
17	6	1	2				9	19	14	17
18	9	2	4				21	31	26	18
19	11	6	7				36	39	38	19
20	16	9	11				58	50	51	20
21	22	13	16			1	82	66	70	21
22	29	20	23			1	95	80	86	22
23	41	31	31			1	99	91	95	23
24	50	44	44		1	1		97	99	24
25	61	59	55	1	1	2		99		25
26	75	73	68	1	1	2				26
27	83	84	80	1	2	3				27
28	89	92	88	2	2	6				28
29	94	97	93	3	3	8				29
30	98	99	97	6	6	13				30
31			99	13	13	24				31
32				25	24	36				32
33				46	44	50				33
34				68	64	66				34
35				82	80	79				35
36				92	92	89				36
37				98	98	94				37
38						98				38
39										39
40										40

Pn = 0.50

Dm = -0.54 0.78 -1.57

TABLE 70
Mean Raw Scores for Classes to Percentile Rank
Mathematics 13
Grade 10

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16							1			16
17			1				3	3	2	17
18	1		9				7	7	4	18
19	7		19				16	16	9	19
20	17	1	28				25	25	21	20
21	28	9	34				34	37	37	21
22	36	25	37				49	53	54	22
23	45	36	45			2	62	65	67	23
24	53	45	51			4	73	76	81	24
25	67	61	58			7	85	89	93	25
26	81	79	72			13	93	97	98	26
27	90	92	83	2		21	98	99		27
28	96	98	89	6	3	27				28
29	99	99	95	14	8	34				29
30			98	23	19	45				30
31			99	34	34	55				31
32				50	49	60				32
33				67	68	71				33
34				83	85	84				34
35				93	96	91				35
36				98		95				36
37						98				37
38										38
39										39
40										40

Pn = 0.54
Dm = 0.95 1.83 -0.33

TABLE 71
Mean Raw Scores for Classes to Percentile Rank
Mathematics 15
Grade 10

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15			3							15
16			8							16
17			10							17
18			13							18
19			21							19
20			32						1	20
21	1	4	42						4	21
22	6	9	47						8	22
23	14	15	56						13	23
24	28	31	66						19	24
25	45	52	71			3	1	1	31	25
26	62	69	75		3	5	6	6	41	26
27	75	75	78		5	12	17	17	51	27
28	80	80	80	3	12	22	41	37	69	28
29	91	91	87	6	22	33	76	71	85	29
30	98	98	94	13	41	51	97	96	93	30
31			98	24	62	69			97	31
32				46	75	79				32
33				65	84	84				33
34				75	92	92				34
35				84	97	97				35
36				92	98	97				36
37				97		98				37
38				98						38
39										39
40										40

Pn = 0.47
Dm = 0.49 1.78 0.73

TABLE 72
Mean Raw Scores for Classes to Percentile Rank
Physical Education 10
Grade 10

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18										18
19										19
20										20
21			1							21
22			1			1				22
23	1	1	1			3	1	1		23
24	1	1	2	2	1	4	6	5	1	24
25	4	2	6	5	3	7	15	13	6	25
26	8	6	9	8	5	10	29	25	15	26
27	13	10	13	16	8	17	52	43	29	27
28	22	15	21	28	16	27	75	65	50	28
29	32	25	28	44	27	38	89	82	73	29
30	46	36	36	61	41	50	96	91	88	30
31	62	51	49	75	56	62	99	97	95	31
32	75	66	62	86	69	72			99	32
33	84	77	74	94	80	82				33
34	91	86	83	97	90	90				34
35	95	93	89	99	95	95				35
36	98	97	93		97	97				36
37		99	96		99	99				37
38			98							38
39										39
40										40

Pn = 0.49
Dm = 0.27 0.79 -0.07

TABLE 73
Mean Raw Scores for Classes to Percentile Rank
Physics 10
Grade 10

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12							1			12
13							5			13
14							11		1	14
15							18		5	15
16							24		13	16
17	1			1			30	2	22	17
18	6		1	2			40	13	29	18
19	12	1	6	2			52	33	43	19
20	15	5	12	2			64	59	59	20
21	22	10	16	4			76	80	74	21
22	32	13	24	5			82	91	81	22
23	38	20	34	7		1	84	98	85	23
24	46	29	39	10		2	89		91	24
25	59	38	49	10		2	95		96	25
26	71	49	63	12		4	98		98	26
27	75	64	73	17		7				27
28	81	74	78	23	1	10				28
29	89	81	85	30	5	15				29
30	91	89	91	39	10	24				30
31	95	91	92	45	24	35				31
32	97	95	95	52	53	46				32
33	97	97	97	65	85	62				33
34	97	97	97	82		85				34
35	98	98	98	96		98				35
36										36
37										37
38										38
39										39
40										40

Pn = 0.64
Dm = -0.20 -1.40 -1.21

TABLE 74
Mean Raw Scores for Classes to Percentile Rank
Science 11
Grade 10

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18		2	2							18
19		7	5							19
20		11	7					1	1	20
21		12	11					2	2	21
22		17	12		5			5	2	22
23		27	17		11	5		13	7	23
24	1	38	24		14	11	1	24	17	24
25	6	46	31		23	13	11	35	25	25
26	13	54	39		35	19	30	45	35	26
27	30	65	46	5	48	27	50	54	45	27
28	50	73	53	14	58	39	69	65	54	28
29	66	79	60	35	67	51	83	76	63	29
30	80	85	67	59	78	58	94	83	69	30
31	92	90	73	77	85	67		88	78	31
32		96	77	90	91	76		95	85	32
33			82	97	96	82			90	33
34			86		98	86			97	34
35			90			91				35
36			96			96				36
37						98				37
38										38
39										39
40										40

Pn = 0.51
Dm = 0.35 1.13 0.49

TABLE 75
Mean Raw Scores for Classes to Percentile Rank
Social Studies 10
Grade 10

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12			1							12
13			2						1	13
14			2						1	14
15			4				1		1	15
16	1	1	5				1		2	16
17	2	2	9				1	1	5	17
18	4	4	15				4	1	7	18
19	7	8	19	1		1	7	3	11	19
20	13	15	22	2		2	13	6	17	20
21	19	20	29	3		3	20	13	24	21
22	25	27	36	5	1	5	31	21	34	22
23	33	34	41	6	3	6	47	34	46	23
24	42	43	49	9	4	10	61	52	58	24
25	52	54	58	15	6	16	77	69	70	25
26	65	68	69	23	12	23	91	86	82	26
27	77	79	78	29	22	29	98	96	91	27
28	87	88	85	34	31	37		99	97	28
29	92	93	91	46	44	49			99	29
30	96	96	94	62	63	64				30
31	98	98	96	76	82	80				31
32	99	99	98	87	94	90				32
33			98	95	98	96				33
34			99	97	99	98				34
35				99		99				35
36										36
37										37
38										38
39										39
40										40

Pn = 0.49
Dm = -0.71 1.47 -1.18

TABLE 78
Mean Raw Scores for Classes to Percentile Rank
Typewriting 10
Grade 10

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17			1							17
18	1	1	2							18
19	3	2	4							19
20	6	6	8						1	20
21	13	12	14						4	21
22	22	17	19				1		9	22
23	34	26	27				7	1	14	23
24	48	41	41				21	4	24	24
25	61	53	52		1		48	12	41	25
26	73	62	58	1	2	1	78	33	59	26
27	85	73	67	3	4	3	94	59	76	27
28	93	85	81	6	7	7	98	83	89	28
29	97	92	88	9	11	10		96	96	29
30	99	96	93	18	18	18		99	98	30
31		99	97	28	27	27				31
32			99	41	36	33				32
33				62	50	45				33
34				83	69	62				34
35				95	85	79				35
36				99	95	93				36
37					98	98				37
38					99	99				38
39										39
40										40

Pn = 0.40
Dm = 3.86 4.59 0.91

TABLE 77
Mean Raw Scores for Classes to Percentile Rank
Biology 20
Grade 11

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16								2	5	16
17			1				4	11	14	17
18	1		2				13	21	19	18
19	2	1	4				19	29	22	19
20	4	4	9				23	45	29	20
21	8	8	14				38	63	44	21
22	12	15	21				53	76	55	22
23	17	24	28				64	86	64	23
24	25	37	37				75	93	75	24
25	30	48	46			3	83	98	83	25
26	38	59	51			5	89		88	26
27	46	73	62		3	10	94		93	27
28	52	83	73		9	18	99		98	28
29	63	90	82	3	17	27				29
30	73	93	88	13	28	39				30
31	81	97	90	29	46	55				31
32	87	99	92	55	71	74				32
33	90		96	83	88	88				33
34	91		99	96	95	94				34
35	95				99	98				35
36	98									36
37	99									37
38										38
39										39
40										40

Pn = 0.44
Dm = -0.04 1.07 -1.30

TABLE 78
Mean Raw Scores for Classes to Percentile Rank
Chemistry 20
Grade 11

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11									1	11
12							1		2	12
13							2		2	13
14							2	1	2	14
15							2	2	3	15
16		1					5	2	5	16
17		3					10	5	9	17
18	2	5	2				20	11	16	18
19	4	7	4				34	22	27	19
20	7	12	6				53	38	41	20
21	12	15	11				70	57	54	21
22	16	23	15				85	76	69	22
23	27	35	23				95	92	82	23
24	39	45	36		2		99	99	92	24
25	48	52	46		3	2			99	25
26	55	57	53	2	5	4				26
27	63	64	59	4	9	8				27
28	73	72	69	8	16	14				28
29	85	81	81	15	27	26				29
30	94	90	90	32	45	45				30
31	97	96	96	55	61	64				31
32	98	98	98	77	79	85				32
33	99	98	99	93	92	96				33
34		99		99	98	99				34
35										35
36										36
37										37
38										38
39										39
40										40

Pn = 0.50
Dm = -0.88 -0.13 -1.91

TABLE 79
Mean Raw Scores for Classes to Percentile Rank
English 20
Grade 11

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15			1							15
16			2				1	1		16
17	1	1	3				3	3		17
18	2	3	5				4	4	1	18
19	3	5	7				7	9	3	19
20	5	7	10				14	18	5	20
21	8	11	14				26	30	14	21
22	11	16	21				41	48	30	22
23	18	24	28				56	64	51	23
24	28	34	38			1	69	77	70	24
25	39	47	51			2	78	86	83	25
26	56	62	63	1	1	3	86	94	94	26
27	71	76	74	2	2	4	94	99	99	27
28	81	83	81	4	4	6	99			28
29	87	89	87	10	6	14				29
30	92	93	91	21	14	24				30
31	96	97	94	33	26	35				31
32	99		98	51	42	50				32
33				68	61	66				33
34				82	76	77				34
35				93	88	86				35
36				98	97	95				36
37				99	99	98				37
38						99				38
39										39
40										40

Pn = 0.46
Dm = 1.86 3.05 1.38

TABLE 80
Mean Raw Scores for Classes to Percentile Rank
English 23
Grade 11

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18		2	2				1	1		18
19	2	3	3				2	2		19
20	3	6	4				3	3	1	20
21	6	9	7				3	3	3	21
22	10	13	11				6	6	3	22
23	14	21	16				12	12	6	23
24	24	32	24				23	23	14	24
25	40	47	37			2	41	39	34	25
26	55	63	52	1	2	3	58	55	56	26
27	67	73	66	3	3	7	75	68	75	27
28	79	81	77	8	8	16	88	82	89	28
29	87	88	83	21	22	26	95	92	97	29
30	93	92	88	36	37	36	99	97		30
31	98	96	94	55	58	52				31
32			98	77	80	71				32
33				91	92	84				33
34				98	98	93				34
35						98				35
36										36
37										37
38										38
39										39
40										40

Pn = 0.57
Dm = 1.92 2.93 2.25

TABLE 81
Mean Raw Scores for Classes to Percentile Rank
French 20
Grade 11

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15			2							15
16			6						1	16
17			8				1		8	17
18	2		13				7	1	19	18
19	7		18				15	8	30	19
20	13		19				25	19	44	20
21	18	4	19				39	29	60	21
22	19	11	24				54	40	75	22
23	24	17	31				67	54	85	23
24	32	21	37	1			82	67	92	24
25	40	30	43	2		1	92	82	97	25
26	51	40	50	5		2	95	92		26
27	60	54	58	7		5	97	95		27
28	67	69	63	8	1	7		97		28
29	73	78	67	13	2	11				29
30	79	85	73	20	5	17				30
31	85	91	79	27	11	23				31
32	91	96	83	38	20	35				32
33	95	98	85	49	36	48				33
34	97		90	60	53	59				34
35			94	75	77	73				35
36			95	88	95	88				36
37			97	96	98	96				37
38				97		98				38
39				98						39
40										40

Pn = 0.33
Dm = 1.60 2.85 -0.08

TABLE 82
Mean Raw Scores for Classes to Percentile Rank
Mathematics 20
Grade 11

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12							1	1		12
13							2	2	1	13
14							4	4	2	14
15							7	10	5	15
16			1				13	17	13	16
17			2				20	29	22	17
18	1		4				32	47	41	18
19	2	1	5				50	61	60	19
20	3	2	10				62	71	70	20
21	4	5	17				71	83	85	21
22	10	14	25				82	94	97	22
23	19	28	33				92	99		23
24	31	40	41				97			24
25	42	55	49			1				25
26	52	72	59			2				26
27	66	84	71	1		4				27
28	79	92	81	2	1	10				28
29	87	97	86	4	4	15				29
30	91	99	88	10	9	19				30
31	96		94	16	17	28				31
32	97		97	25	34	47				32
33	99		97	45	59	65				33
34			98	65	82	79				34
35			99	82	93	89				35
36				92	97	93				36
37				94		94				37
38				97		97				38
39										39
40										40

Pn = 0.51
Dm = -0.72 -0.09 -1.87

TABLE 83
Mean Raw Scores for Classes to Percentile Rank
Mathematics 23
Grade 11

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14		1								14
15		2	1							15
16	1	2	2							16
17	2	2	2				3	2	3	17
18	2	3	3				7	6	8	18
19	4	5	5				10	10	11	19
20	7	9	9				20	20	19	20
21	11	17	18				37	37	33	21
22	19	25	27				57	58	51	22
23	31	37	38				74	75	69	23
24	47	49	51			1	82	82	79	24
25	59	59	64		1	2	90	91	85	25
26	69	69	74	1	2	5	99		95	26
27	80	78	83	3	3	8				27
28	86	84	89	6	6	12				28
29	91	90	93	10	10	20				29
30	96	93	96	19	19	29				30
31	98	96	98	29	29	48				31
32	98	98	98	49	48	71				32
33	99	98	99	74	72	84				33
34		99		90	87	93				34
35				98	96	99				35
36										36
37										37
38										38
39										39
40										40

Pn = 0.52
Dm = -0.16 0.42 -0.76

TABLE 84
Mean Raw Scores for Classes to Percentile Rank
Mathematics 25 *
Grade 11

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17		7	3							17
18		17	10							18
19		33	13						3	19
20	7	53	20						7	20
21	13	69	33						10	21
22	20	83	43						20	22
23	37	89	53	3					30	23
24	50	96	66	7	3				47	24
25	63		76	13	13				63	25
26	79		83	20	20		3	7	73	26
27	86		86	20	30		10	23	83	27
28	89		89	20	47		23	53	86	28
29	93		93	33	69	3	50	83	93	29
30	96		96	47	89	13	76	96		30
31				59	96	20	93			31
32				76		33				32
33				86		66				33
34				93		93				34
35				96						35
36										36
37										37
38										38
39										39
40										40

Pn = 0.43

Dm = 0.64 1.75 -0.51

* = These norms are based on only 15 classes

TABLE 85
Mean Raw Scores for Classes to Percentile Rank
Physical Education 20
Grade 11

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18										18
19										19
20										20
21										21
22								1		22
23								4		23
24				1			1	6	1	24
25				2			5	11	4	25
26				3		1	10	22	8	26
27	1			5	1	1	22	38	20	27
28	2	1	1	8	2	3	43	56	42	28
29	5	3	3	15	4	7	68	73	68	29
30	11	9	9	21	12	14	87	88	87	30
31	17	16	16	28	23	25	95	95	95	31
32	25	29	27	40	38	42	99	99	99	32
33	38	46	42	56	59	61				33
34	50	67	64	71	79	78				34
35	69	86	84	82	93	91				35
36	86	95	93	93	99	98				36
37	93	98	97							37
38	97	98	98							38
39	98	99	98							39
40	98		99							40

Pn = 0.54
Dm = 0.40 0.99 0.36 --

TABLE 86
Mean Raw Scores for Classes to Percentile Rank
Physics 20
Grade 11

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14	1									14
15	3						5			15
16	4						13	5	3	16
17	5		1				23	13	9	17
18	10		3				40	23	17	18
19	19		4				55	40	31	19
20	27		5				66	57	46	20
21	37		9				80	74	58	21
22	47	1	18				93	88	74	22
23	57	3	26				98	97	85	23
24	67	4	36	1					94	24
25	75	10	46	3		1				25
26	82	19	56	4		3				26
27	88	33	67	8		4				27
28	93	47	74	13		8				28
29	96	61	80	27	1	13				29
30	98	74	88	45	4	22				30
31		83	93	64	9	35				31
32		91	96	87	24	50				32
33		94	97	98	47	67				33
34		98	98		73	87				34
35					93	98				35
36										36
37										37
38										38
39										39
40										40

Pn = 0.68
Dm = -1.00 -0.77 -1.69

TABLE 87
Mean Raw Scores for Classes to Percentile Rank
Social Studies 20
Grade 11

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14									1	14
15		1	1						1	15
16	1	2	2					1	2	16
17	3	3	3					2	6	17
18	4	4	5				1	5	10	18
19	8	9	10				5	10	12	19
20	13	13	17				10	15	16	20
21	20	18	23		1		16	22	26	21
22	28	25	31	1	2	1	33	36	42	22
23	38	33	40	2	4	2	55	51	53	23
24	50	42	50	4	9	4	76	67	65	24
25	59	52	59	11	15	11	90	82	80	25
26	67	59	66	18	21	20	97	91	89	26
27	77	66	75	26	28	30		96	93	27
28	88	73	84	41	38	44		99	97	28
29	95	82	92	58	49	64			99	29
30	97	90	96	71	61	79				30
31	98	95	98	82	74	88				31
32	99	97	98	92	82	95				32
33		98	99	97	89	98				33
34		99		99	95	99				34
35					97					35
36					98					36
37					99					37
38										38
39										39
40										40

Pn = 0.49
Dm = 0.16 1.58 -0.72

TABLE 88
Mean Raw Scores for Classes to Percentile Rank
Biology 30
Grade 12

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10								1		10
11								2		11
12								2		12
13								5	1	13
14							1	6	2	14
15							2	10	5	15
16							3	16	6	16
17							6	27	10	17
18	2	2					12	37	22	18
19	3	3	2				27	47	35	19
20	3	3	3				43	61	48	20
21	4	5	3				58	73	66	21
22	7	9	4				75	81	80	22
23	11	19	7				86	88	89	23
24	20	31	14				93	94	96	24
25	31	42	23				99	98		25
26	40	48	36	1	1	1				26
27	47	55	46	2	2	2				27
28	50	67	50	2	2	2				28
29	59	78	57	5	6	3				29
30	70	87	67	18	21	10				30
31	78	94	77	37	40	26				31
32	85	98	83	50	55	41				32
33	91		90	66	72	54				33
34	95		96	80	90	69				34
35	98			92	99	82				35
36						93				36
37										37
38										38
39										39
40										40

Pn = 0.38
Dm = 0.65 2.06 -1.34

TABLE 89
Mean Raw Scores for Classes to Percentile Rank
Chemistry 30
Grade 12

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16							4			16
17							14	4	4	17
18							26	18	14	18
19		1					41	38	26	19
20	1	4	1				54	58	43	20
21	4	7	3				69	78	57	21
22	7	10	6				83	92	71	22
23	10	18	9				91	98	85	23
24	16	29	14				95		92	24
25	26	40	25		1	1	98		98	25
26	39	56	39	1	4	5				26
27	56	70	55	5	9	11				27
28	70	83	70	11	13	14				28
29	82	92	83	18	18	18				29
30	91	93	92	25	28	29				30
31	93	97	93	39	43	46				31
32	97		97	57	61	63				32
33				79	82	82				33
34				93	94	94				34
35				98	98	98				35
36										36
37										37
38										38
39										39
40										40

Pn = 0.53
Dm = -0.54 -0.69 -2.86

TABLE 90
Mean Raw Scores for Classes to Percentile Rank
English 30
Grade 12

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18							1	1	1	18
19	1		1				4	8	7	19
20	3	1	2				13	20	16	20
21	6	2	5				27	32	27	21
22	12	5	11				41	43	39	22
23	23	12	23				61	60	55	23
24	36	25	36				81	77	74	24
25	46	38	46				92	89	88	25
26	55	50	55				98	97	96	26
27	63	61	65	1		1			99	27
28	74	73	76	3	1	4				28
29	84	84	86	9	4	11				29
30	90	91	91	17	14	20				30
31	93	94	94	29	28	31				31
32	95	96	96	43	45	47				32
33	98	98	98	61	66	68				33
34	99			81	86	86				34
35				93	96	95				35
36				98	99	98				36
37				99						37
38										38
39										39
40										40

Pn = 0.47
Dm = 2.18 2.81 1.40

TABLE 91
Mean Raw Scores for Classes to Percentile Rank
English 33
Grade 12

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18			2					1	1	18
19			7				1	2	2	19
20			11				2	2	2	20
21		3	12				2	2	2	21
22		8	14				2	3	3	22
23	4	11	18				6	7	7	23
24	10	16	26				20	20	20	24
25	17	27	36			2	40	40	36	25
26	35	42	46			8	60	57	52	26
27	55	56	54		6	15	79	70	69	27
28	75	72	64	1	17	23	91	84	82	28
29	88	84	76	7	32	34	95	94	92	29
30	94	89	83	22	50	43	97	95	95	30
31	97	93	87	40	69	52		97	95	31
32	98	96	90	61	87	66			97	32
33		97	92	83	97	77				33
34		98	95	95		86				34
35			97			93				35
36			97			97				36
37			98							37
38										38
39										39
40										40

Pn = 0.58
Dm = 2.27 3.45 1.70

TABLE 92
Mean Raw Scores for Classes to Percentile Rank
French 30
Grade 12

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16			1						1	16
17		1	3						4	17
18		3	4				1	1	10	18
19		4	9				7	9	17	19
20		7	13				16	19	27	20
21		10	17				29	34	43	21
22	1	13	27				47	52	54	22
23	4	17	37				61	64	61	23
24	7	24	43				72	79	68	24
25	11	31	55				87	92	81	25
26	17	37	69				95	97	92	26
27	27	43	79			6	98		95	27
28	39	50	89			13			98	28
29	50	61	97		6	16				29
30	64	71			14	23				30
31	78	79			20	33				31
32	91	88		9	29	46				32
33	98	95		31	44	58				33
34				64	65	71				34
35				91	79	87				35
36					91	97				36
37										37
38										38
39										39
40										40

Pn = 0.27
Dm = 0.68 2.49 -0.13

TABLE 93
Mean Raw Scores for Classes to Percentile Rank
Mathematics 30
Grade 12

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13							4			13
14							11			14
15							24	5		15
16							38	21	2	16
17							49	42	15	17
18							60	60	36	18
19	2						68	75	54	19
20	5		2				76	85	70	20
21	7	2	5				83	93	81	21
22	12	5	8				89	97	90	22
23	21	11	15	1			93		96	23
24	31	20	27	2			96		99	24
25	43	37	41	3		2	99			25
26	57	57	54	3		3				26
27	68	69	65	4	2	3				27
28	72	77	72	10	3	8				28
29	77	89	77	18	5	20				29
30	85	98	85	27	14	32				30
31	94		95	39	29	49				31
32	99			53	50	70				32
33				68	78	88				33
34				84	94	97				34
35				94	97	99				35
36				97	99					36
37				98						37
38				99						38
39										39
40										40

Pn = 0.50
Dm = -0.80 -0.92 -2.51

TABLE 94
Mean Raw Scores for Classes to Percentile Rank
Mathematics 31
Grade 12

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14								4		14
15								12		15
16							8	19	8	16
17							19	35	19	17
18							46	57	23	18
19							80	76	38	19
20							96	92	61	20
21									76	21
22			2						92	22
23			4							23
24	2		12							24
25	8	2	23							25
26	19	4	29							26
27	35	12	40							27
28	57	23	61							28
29	78	31	73	2		2				29
30	92	50	80	10	2	10				30
31		69	92	17	10	17				31
32		80	98	35	23	35				32
33		92		59	42	57				33
34		98		78	61	76				34
35				94	82	94				35
36					98					36
37										37
38										38
39										39
40										40

Pn = 0.73
Dm = 1.16 0.39 -0.55

TABLE 95
Mean Raw Scores for Classes to Percentile Rank
Mathematics 33
Grade 12

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18							3	3		18
19							17	13	3	19
20							44	28	8	20
21		3	3				73	50	22	21
22		11	11				93	73	47	22
23	3	19	19					90	72	23
24	17	35	35					98	90	24
25	43	52	52						98	25
26	70	69	66			3				26
27	87	83	79		4	7				27
28	94	88	87		11	13				28
29	98	91	91	4	28	29				29
30		94	91	21	51	49				30
31		98	94	46	68	61				31
32			98	66	81	70				32
33				83	93	81				33
34				95	98	90				34
35						94				35
36						98				36
37										37
38										38
39										39
40										40

	Evaluative	Usefulness	Difficulty
Pn = 0.53			
Dm =	0.41	-0.58	-3.03

TABLE 98
Mean Raw Scores for Classes to Percentile Rank
Physical Education 30
Grade 12

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17										17
18										18
19										19
20										20
21										21
22										22
23										23
24								1		24
25								4		25
26		2			1		2	11	4	26
27		5			2		15	25	16	27
28		13			7		36	39	35	28
29		27			19	1	62	49	53	29
30		36	2	1	38	4	87	66	76	30
31		42	9	5	53	10	97	88	93	31
32	4	51	21	15	63	22	98	97	97	32
33	19	62	34	35	76	41		97	98	33
34	35	75	42	53	89	56		98		34
35	47	82	52	66	98	67				35
36	66	89	67	78		79				36
37	82	97	79	92		92				37
38	93		88							38
39			97							39
40										40

Pn = 0.52

Dm = 1.55 1.68 0.41

TABLE 97
Mean Raw Scores for Classes to Percentile Rank
Physics 30
Grade 12

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16							9	7	8	16
17	1						37	24	22	17
18	8						65	49	43	18
19	17						81	69	63	19
20	25	3	1				92	80	73	20
21	36	9	8				97	90	81	21
22	49	14	17				98	97	90	22
23	57	20	26	1				98	97	23
24	63	30	39	4					97	24
25	69	42	52	7					98	25
26	76	51	61	13	1	1				26
27	84	57	69	18	4	5				27
28	92	63	75	22	8	13				28
29	97	69	81	34	14	18				29
30		75	90	46	20	26				30
31		77	97	59	32	39				31
32		84		75	50	56				32
33		92		84	68	76				33
34		94		89	82	88				34
35		97		96	89	96				35
36					96					36
37										37
38										38
39										39
40										40

Pn = 0.73
Dm = 0.20 -0.14 -1.36

TABLE 98
Mean Raw Scores for Classes to Percentile Rank
Social Studies 30
Grade 12

Raw Score	Evaluative			Usefulness			Difficulty			Raw Score
	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	Fall	Mid-Year	Year-End	
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
17			2				1		1	17
18	1	2	5				3	1	4	18
19	4	5	5				7	5	7	19
20	6	6	6				16	9	15	20
21	9	9	10			1	27	17	24	21
22	16	16	17			3	39	28	34	22
23	26	25	24		1	5	55	41	47	23
24	36	34	30	1	3	6	67	57	59	24
25	50	47	39	3	5	9	80	69	69	25
26	65	61	51	7	8	12	94	82	80	26
27	80	74	62	11	13	15	99	94	92	27
28	89	84	73	15	17	20		99	99	28
29	91	90	82	25	26	28				29
30	92	92	88	43	41	40				30
31	95	94	90	63	58	53				31
32	97	96	92	82	77	67				32
33	98	98	94	92	90	82				33
34		99	96	96	96	91				34
35			97		99	94				35
36			98			98				36
37										37
38										38
39										39
40										40

Pn = 0.45
Dm = 0.28 1.50 -2.13

PROVINCIAL STATISTICS

In cases where statistics are based on relatively small samples, subjects have been marked with an asterisk (*).

TABLE 99: Provincial Statistics for Grade 5 at FALL

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Reading(Literature)	29.3	2.7	590	30	33.1	2.3	583	30	27.9	1.8	582	30
Language(Composition)	28.2	2.9	750	37	32.2	2.2	741	37	27.0	2.1	747	37
Spelling	29.1	2.9	573	29	33.2	2.5	560	29	28.4	1.3	571	29
Art	36.3	3.1	648	32	33.4	2.8	639	32	32.2	1.9	637	32
French	27.1	4.8	474	24	30.0	3.9	470	24	24.6	2.8	469	24
Health	28.2	4.5	482	24	31.9	3.1	480	24	28.3	2.5	477	24
Mathematics	31.2	2.3	746	37	34.7	1.8	738	37	27.5	2.1	734	37
Music	31.0	5.3	729	36	30.4	3.8	725	36	30.4	3.1	720	36
Physical Education	36.8	2.5	741	37	35.1	1.8	734	37	32.1	2.0	733	37
Science	30.4	3.4	632	31	32.8	1.9	621	31	28.1	2.2	618	31
Social Studies	28.1	4.3	729	36	31.5	3.3	730	36	26.7	2.3	730	36

TABLE 100: Provincial Statistics for Grade 5 at MID-YEAR

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Reading(Literature)	28.9	3.2	836	41	32.9	2.1	831	41	27.5	2.4	832	41
Language(Composition)	26.9	3.2	959	46	32.0	2.1	952	46	26.7	1.9	949	46
Spelling	28.9	3.5	816	39	33.1	2.6	807	39	28.8	2.0	813	39
Art	35.8	3.0	809	39	32.5	2.4	803	39	32.1	1.9	806	39
French	25.6	5.2	469	23	29.3	5.0	467	23	24.5	3.4	467	23
Health	26.6	3.6	618	30	31.6	3.2	615	30	27.4	2.9	613	30
Mathematics	30.2	2.5	974	47	35.1	1.4	969	47	27.0	1.9	969	47
Music	30.3	5.5	862	41	29.7	4.7	852	41	29.4	2.6	853	41
Physical Education	35.5	3.3	625	30	34.4	2.6	615	30	31.4	2.5	620	30
Science	29.4	3.5	841	41	32.4	2.6	828	41	27.0	2.6	833	41
Social Studies	26.7	4.3	946	46	30.9	3.0	932	46	25.3	2.9	932	46

TABLE 101: Provincial Statistics for Grade 5 at YEAR END

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Reading(Literature)	28.7	2.6	2544	115	33.0	2.0	2536	115	27.7	2.0	2532	115
Language(Composition)	27.1	3.0	2463	116	32.2	2.4	2446	116	26.8	2.0	2452	116
Spelling	28.8	2.8	2407	113	33.6	2.2	2384	113	29.1	2.0	2399	113
Art	34.8	3.5	2365	109	31.8	2.9	2347	109	31.7	2.2	2348	109
French	24.0	6.1	1338	64	28.3	5.2	1316	64	23.5	3.2	1320	64
Health	27.2	4.3	1751	83	32.0	3.1	1725	83	27.8	3.6	1728	83
Mathematics	29.4	3.2	2556	118	35.1	2.1	2537	118	26.0	2.2	2527	118
Music	28.9	5.2	2333	111	28.6	4.1	2312	111	29.6	3.1	2295	111
Physical Education	36.2	2.5	2421	114	34.6	2.0	2396	114	32.3	2.2	2391	114
Science	28.3	4.3	2410	112	32.0	2.9	2377	112	26.6	2.5	2373	112
Social Studies	27.6	3.8	2483	118	32.1	2.7	2463	118	25.4	2.4	2468	118

S.D.=Standard Deviation; NS=Number of Students; NC=Number of Classes

TABLE 102: Provincial Statistics for Grade 8 at FALL

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Reading(Literature)	27.2	2.4	760	33	32.8	2.1	754	33	27.6	1.9	763	33
Language(Composition)	26.2	2.8	824	34	32.3	2.8	818	34	26.6	2.0	823	34
Spelling	28.1	3.0	736	32	33.6	2.0	736	32	28.9	2.0	734	32
Art	34.1	3.3	748	33	31.6	2.8	743	33	31.2	2.1	743	33
French	23.0	5.5	512	22	28.8	4.8	508	22	22.6	3.4	508	22
Health	27.0	4.1	576	26	31.1	2.8	567	26	28.1	2.5	565	26
Mathematics	29.6	3.2	814	35	35.5	2.1	807	35	26.6	2.4	807	35
Music	29.0	3.8	746	32	28.7	3.0	736	32	29.1	2.7	730	32
Physical Education	35.9	2.5	814	34	34.4	2.4	803	34	32.0	2.1	802	34
Science	29.1	4.3	771	33	32.5	3.3	764	33	26.8	2.6	760	33
Social Studies	27.1	4.8	782	33	31.5	3.4	776	33	25.8	2.7	772	33

TABLE 103: Provincial Statistics for Grade 8 at MID-YEAR

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Reading(Literature)	27.5	2.6	774	37	33.0	1.9	772	37	27.3	2.2	774	37
Language(Composition)	26.7	3.5	1040	47	32.6	2.1	1033	47	26.3	1.9	1035	47
Spelling	28.5	3.0	779	37	33.7	2.3	777	37	28.9	2.1	775	37
Art	34.9	3.1	925	41	31.9	2.8	923	41	30.9	2.1	921	41
French	22.9	6.1	504	23	27.7	4.5	498	23	22.3	4.4	504	23
Health	26.9	3.8	565	26	31.7	2.9	560	26	26.5	1.8	563	26
Mathematics	28.4	3.0	1019	46	35.1	1.9	1014	46	25.1	2.3	1015	46
Music	27.3	5.8	951	44	27.4	4.8	949	44	28.8	3.0	948	44
Physical Education	34.6	3.3	1034	48	33.6	2.7	1033	48	30.7	2.1	1030	48
Science	28.6	3.8	900	41	32.2	2.7	893	41	25.6	2.4	893	41
Social Studies	28.4	3.7	1054	48	31.6	2.8	1054	48	25.1	2.1	1053	48

TABLE 104: Provincial Statistics for Grade 8 at YEAR END

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Reading(Literature)	27.2	3.1	2431	114	32.6	2.4	2416	114	27.4	2.1	2415	114
Language(Composition)	25.8	3.7	2693	125	31.9	3.0	2671	125	25.9	2.3	2676	125
Spelling	27.1	3.9	2310	111	33.3	2.9	2294	111	28.6	2.3	2299	111
Art	33.3	3.9	2343	114	30.4	3.2	2323	114	30.9	2.3	2333	114
French	22.9	5.1	1376	66	28.4	5.0	1367	66	23.3	2.9	1372	66
Health	25.9	5.3	1650	77	30.9	4.2	1636	77	27.4	3.1	1635	77
Mathematics	28.3	3.6	2766	127	35.3	2.3	2750	127	24.8	2.5	2739	127
Music	26.1	5.4	2489	117	26.1	4.0	2473	117	29.0	3.5	2475	117
Physical Education	35.9	2.6	2657	122	34.1	2.5	2646	122	31.6	1.9	2631	122
Science	27.0	4.9	2427	115	31.6	3.4	2403	115	24.9	2.7	2391	115
Social Studies	26.9	4.1	2694	125	31.1	3.4	2664	125	25.0	2.4	2659	125

S.D.=Standard Deviation; NS=Number of Students; NC=Number of Classes

TABLE 105: Provincial Statistics for Grade 7 at FALL

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Reading(Literature)	26.0	3.9	623	26	31.8	2.8	616	26	26.2	1.4	620	26
Language(Composition)	25.2	4.0	945	39	32.0	2.3	938	39	24.5	2.4	938	39
Art	31.7	3.7	472	20	29.7	2.6	472	20	27.9	1.9	466	20
Drama *	35.1	2.6	223	11	33.2	2.4	220	11	29.9	1.6	223	11
French	27.5	4.3	605	27	32.2	3.5	600	27	23.0	2.9	600	27
Health	25.2	3.4	521	21	30.6	2.3	516	21	27.4	2.6	515	21
Home Economics *	34.2	3.7	162	13	36.4	2.4	161	13	29.2	2.4	161	13
Industrial Arts *	33.2	4.7	193	14	33.9	2.5	192	14	26.9	2.6	192	14
Mathematics	27.7	3.4	966	40	34.7	1.9	962	40	23.8	1.7	964	40
Music	31.0	6.0	527	23	29.7	4.7	528	23	27.5	1.7	527	23
Physical Education	33.6	3.0	827	37	32.6	2.4	820	37	29.3	1.6	818	37
Science	25.6	4.6	916	38	30.4	3.1	906	38	23.3	2.7	908	38
Social Studies	27.5	4.1	912	38	30.8	2.9	896	38	25.7	2.2	898	38

TABLE 106: Provincial Statistics for Grade 7 at MID-YEAR

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Reading(Literature)	25.8	2.4	380	20	31.2	2.4	378	20	26.0	1.7	378	20
Language(Composition)	25.7	3.4	733	31	32.6	2.7	732	31	24.5	2.2	727	31
Art	29.5	2.9	350	15	28.4	2.5	348	15	27.3	2.5	345	15
Drama *	29.5	4.7	119	4	28.1	2.4	118	4	27.8	2.8	119	4
French	26.4	3.2	358	17	31.6	2.7	354	17	24.2	2.7	359	17
Health	27.0	4.2	465	23	30.2	3.0	464	23	28.1	2.9	463	23
Home Economics *	25.9	4.5	221	10	31.0	3.3	217	10	25.8	2.5	218	10
Industrial Arts *	35.4	2.0	232	10	35.0	1.5	233	10	26.6	1.6	232	10
Mathematics	26.1	4.1	647	28	33.9	2.9	646	28	22.7	2.1	645	28
Music *	31.6	3.4	202	9	30.8	2.0	202	9	26.5	1.8	203	9
Physical Education	34.0	3.1	674	29	32.1	2.3	670	29	28.9	1.7	671	29
Science	28.5	4.9	671	28	32.0	3.0	670	28	22.5	2.7	667	28
Social Studies	24.7	4.6	708	29	29.3	2.8	704	29	24.6	2.2	703	29

TABLE 107: Provincial Statistics for Grade 7 at YEAR END

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Reading(Literature)	25.3	3.1	1355	63	30.4	2.6	1344	63	26.1	2.4	1351	63
Language(Composition)	25.1	3.7	2206	95	32.2	2.9	2193	95	23.7	2.0	2192	95
Art	28.7	5.1	1229	57	26.7	3.6	1221	57	28.1	2.6	1221	57
Drama	31.1	5.9	373	22	28.5	5.1	369	22	29.7	3.0	371	22
French	23.9	5.1	1112	58	29.8	4.4	1105	58	21.1	2.6	1102	58
Health	24.8	4.3	1069	44	29.3	3.3	1057	44	27.3	3.0	1061	44
Home Economics	28.9	6.5	497	34	32.3	5.0	495	34	28.0	2.8	494	34
Industrial Arts	33.9	3.7	451	32	34.1	2.9	451	32	27.5	1.7	450	32
Mathematics	25.1	4.2	2255	99	34.1	3.0	2229	99	22.3	2.4	2233	99
Music	28.4	5.1	928	48	28.0	3.9	920	48	27.1	2.4	916	48
Physical Education	33.0	3.3	1986	91	31.3	3.2	1970	91	29.4	1.9	1973	91
Science	26.6	5.2	1923	85	30.6	3.7	1912	85	22.5	2.6	1897	85
Social Studies	25.1	5.4	1936	86	28.6	4.5	1921	86	24.4	3.4	1926	86

S.D.=Standard Deviation; NS=Number of Students; NC=Number of Classes

TABLE 108: Provincial Statistics for Grade 8 at FALL

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Reading(Literature)	25.2	3.6	734	33	31.1	3.0	730	33	26.2	2.6	729	33
Language(Composition)	25.8	4.0	884	40	31.9	2.8	884	40	23.3	2.6	874	40
Art	29.2	4.8	458	22	28.1	3.9	448	22	27.3	1.7	453	22
Drama *	31.3	5.1	237	13	29.4	3.4	236	13	27.4	2.3	234	13
French	22.6	4.0	492	24	30.7	3.6	490	24	20.1	3.0	493	24
Health	22.7	5.0	450	20	27.9	3.8	450	20	24.7	2.4	443	20
Home Economics	30.3	4.7	500	36	33.3	2.9	498	36	27.8	2.8	499	36
Industrial Arts	32.8	4.0	561	37	33.5	3.0	559	37	26.2	2.0	556	37
Mathematics	25.5	4.8	908	41	33.6	2.8	900	41	22.7	2.2	901	41
Music	27.9	5.1	328	16	27.1	3.9	326	16	24.8	2.1	325	16
Physical Education	32.1	3.2	811	38	31.1	2.9	805	38	27.8	1.9	807	38
Science	26.3	5.0	882	38	29.8	3.4	877	38	22.3	3.2	879	38
Social Studies	25.2	4.4	866	37	29.8	2.9	853	37	23.3	2.8	856	37

TABLE 109: Provincial Statistics for Grade 8 at MID-YEAR

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Reading(Literature)	25.0	3.3	360	20	30.0	2.8	360	20	25.9	2.4	359	20
Language(Composition)	25.1	2.9	646	28	32.6	2.1	642	28	24.8	2.4	641	28
Art	26.5	4.3	294	15	25.6	3.2	296	15	26.0	2.4	296	15
Drama *	28.9	3.6	129	4	26.0	2.8	127	4	26.7	2.3	127	4
French	20.4	3.4	317	15	28.7	3.2	315	15	20.4	3.0	316	15
Health	23.1	4.0	364	17	27.0	3.6	365	17	28.9	2.1	360	17
Home Economics *	24.6	6.6	250	13	29.8	5.3	250	13	27.0	2.3	248	13
Industrial Arts	33.9	2.8	334	17	34.1	2.4	333	17	26.7	1.9	331	17
Mathematics	24.7	3.3	321	13	34.0	2.4	321	13	21.6	1.8	322	13
Music *	26.7	5.3	165	8	26.2	4.1	164	8	25.8	2.8	165	8
Physical Education	32.0	3.1	450	26	30.8	2.8	450	26	28.5	2.1	450	26
Science	25.5	4.7	440	25	29.4	3.4	440	25	21.5	2.9	440	25
Social Studies	24.8	5.1	440	25	29.0	3.9	440	25	22.9	3.1	440	25

TABLE 110: Provincial Statistics for Grade 8 at YEAR END

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Reading(Literature)	24.8	3.1	1313	60	29.8	2.6	1301	60	25.5	2.2	1305	60
Language(Composition)	24.1	3.3	1868	89	32.1	2.7	1868	89	22.9	2.3	1863	89
Art	26.5	4.4	991	58	24.7	3.7	978	58	28.1	2.3	974	58
Drama	28.8	5.0	443	29	26.2	3.4	439	29	28.1	2.9	430	29
French	21.9	4.8	547	31	28.5	3.9	548	31	20.4	3.1	546	31
Health	22.0	4.7	801	38	26.3	4.5	800	38	26.9	3.5	802	38
Home Economics	28.6	5.6	699	51	32.1	4.8	690	51	28.0	2.4	685	51
Industrial Arts	31.1	5.3	796	54	32.5	4.1	792	54	26.9	2.4	795	54
Mathematics	24.6	4.5	1923	91	34.4	2.8	1907	91	21.3	2.4	1909	91
Music	25.5	5.5	571	34	25.2	4.2	566	34	26.7	3.4	561	34
Physical Education	31.4	3.0	1833	89	30.3	2.6	1808	89	29.2	2.2	1800	89
Science	24.6	4.4	1919	87	28.9	3.4	1894	87	20.7	2.6	1904	87
Social Studies	24.4	5.8	1826	83	28.2	4.8	1816	83	22.5	3.4	1823	83

S.D.=Standard Deviation; NS=Number of Students; NC=Number of Classes

TABLE 111: Provincial Statistics for Grade 9 at FALL

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Reading(Literature)	25.7	3.6	619	30	30.7	2.1	615	30	25.7	2.3	621	30
Language(Composition)	24.3	3.5	811	40	32.2	2.7	807	40	22.6	2.1	811	40
Art *	27.9	5.1	208	11	26.6	3.3	204	11	27.5	1.6	205	11
Drama *	33.9	2.1	70	3	30.6	3.6	67	3	28.1	2.3	67	3
French	21.4	4.5	348	16	30.4	3.3	347	16	19.5	2.3	348	16
Guidance 9	25.2	6.6	770	35	30.3	4.6	764	35	29.1	2.9	757	35
Health *	23.4	5.8	124	7	28.0	4.1	122	7	25.9	2.6	122	7
Home Economics	28.8	5.7	307	23	32.5	4.5	305	23	27.1	2.4	299	23
Industrial Arts	31.9	4.0	325	22	32.7	3.5	314	22	26.6	2.1	320	22
Mathematics	25.7	4.7	703	34	33.7	2.7	699	34	21.7	2.6	702	34
Music *	27.5	4.2	221	10	28.1	4.0	220	10	26.2	3.8	220	10
Physical Education	30.9	3.9	600	33	29.5	3.5	592	33	28.4	2.4	594	33
Science	24.1	3.6	865	41	29.2	2.5	858	41	20.1	2.8	858	41
Social Studies	24.2	5.1	856	41	27.6	3.9	851	41	21.9	2.6	851	41
Typing *	30.8	3.3	172	9	33.8	2.3	170	9	26.7	2.0	169	9

TABLE 112: Provincial Statistics for Grade 9 at MID-YEAR

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Reading(Literature)	24.7	3.0	346	18	28.7	2.9	346	18	26.2	3.3	345	18
Language(Composition)	24.0	3.5	441	23	32.6	2.2	438	23	23.0	2.7	438	23
Art *	25.8	4.4	139	6	24.7	2.8	137	6	27.3	1.3	133	6
Drama *	28.4	2.3	70	3	25.3	2.3	72	3	29.6	1.1	72	3
French *	22.4	3.3	98	7	30.2	2.2	98	7	21.4	2.9	98	7
Guidance 9	22.2	5.1	502	24	30.6	5.2	497	24	29.2	2.0	501	24
Health *	24.0	3.1	60	4	30.5	2.7	60	4	25.0	2.5	60	4
Home Economics *	29.7	5.0	117	10	34.0	3.5	117	10	28.6	1.6	117	10
Industrial Arts *	30.3	2.2	97	8	31.5	2.6	96	8	25.5	1.9	94	8
Mathematics	25.7	4.0	431	23	35.6	1.4	429	23	19.5	2.5	430	23
Music *	24.6	4.9	71	3	24.5	3.4	70	3	23.0	2.4	71	3
Physical Education	33.3	2.2	429	24	31.4	2.8	427	24	29.1	1.7	426	24
Science	26.2	3.8	393	20	30.9	3.1	390	20	18.8	2.7	392	20
Social Studies	25.9	5.6	412	21	29.0	4.7	412	21	22.9	2.5	412	21
Typing *	29.9	2.4	157	7	33.8	1.1	155	7	26.9	1.7	155	7

TABLE 113: Provincial Statistics for Grade 9 at YEAR END

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Reading(Literature)	25.4	3.4	1187	62	30.1	2.8	1183	62	25.3	2.6	1179	62
Language(Composition)	23.9	4.1	1865	93	31.8	3.3	1853	93	22.3	2.4	1854	93
Art	27.4	5.1	538	34	26.0	4.4	535	34	28.7	2.7	534	34
Drama	29.4	4.8	247	16	26.7	4.5	242	16	29.4	2.7	240	16
French	23.5	4.1	387	22	30.6	3.6	386	22	20.6	2.7	379	22
Guidance 9	22.9	5.4	1934	93	28.8	4.7	1923	93	29.5	2.6	1913	93
Health *	22.3	4.3	208	11	26.8	3.8	202	11	26.7	3.1	205	11
Home Economics	27.3	5.6	565	45	31.4	4.1	562	45	28.6	3.1	560	45
Industrial Arts	26.9	7.2	541	42	28.8	6.0	538	42	26.0	2.9	534	42
Mathematics	25.1	4.2	1907	94	34.3	2.3	1893	94	19.9	2.6	1891	94
Music	27.2	5.7	357	22	25.6	4.9	357	22	27.5	2.7	352	22
Physical Education	31.1	3.6	1750	91	29.9	3.2	1741	91	29.2	2.1	1736	91
Science	24.3	5.5	1497	75	29.7	4.1	1475	75	18.9	2.8	1486	75
Social Studies	24.7	4.8	1460	74	28.2	3.9	1451	74	23.7	3.2	1452	74
Typing	25.2	4.3	381	19	31.9	3.5	382	19	26.9	2.3	381	19

S.D.=Standard Deviation; NS=Number of Students; NC=Number of Classes

TABLE 114: Provincial Statistics for Grade 10 at FALL

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Biology 10	26.4	4.6	600	23	30.1	2.8	597	23	21.3	2.7	591	23
Chemistry 10	27.0	2.8	640	24	31.0	1.3	637	24	21.7	2.6	636	24
English 10	26.4	3.5	718	27	33.0	2.1	713	27	23.4	2.0	715	27
English 13	25.7	3.1	404	18	30.7	2.5	398	18	25.8	1.8	400	18
French 10	25.2	5.5	195	11	33.0	2.5	195	11	22.4	2.3	195	11
Mathematics 10	24.0	3.4	582	22	33.7	1.9	581	22	19.9	1.6	580	22
Mathematics 13	23.8	2.8	416	17	32.3	2.1	413	17	22.6	2.6	416	17
Mathematics 15 *	25.8	2.3	156	7	32.8	2.1	155	7	28.5	1.1	153	7
Physical Education 10	30.6	2.7	1229	48	29.8	2.3	1216	48	27.3	1.7	1215	48
Physics 10	24.8	3.9	367	15	30.9	3.9	368	15	19.3	3.6	370	15
Science 11 *	28.4	1.7	236	7	30.0	1.5	239	7	27.3	1.4	239	7
Social Studies 10	24.9	3.3	988	39	29.2	3.0	990	39	23.4	2.3	987	39
Typewriting 10	24.4	2.5	908	37	32.5	2.0	906	37	25.5	1.2	910	37

TABLE 115: Provincial Statistics for Grade 10 at MID-YEAR

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Biology 10	25.7	3.7	397	17	29.5	2.6	401	17	21.0	3.0	401	17
Chemistry 10	27.0	3.1	408	17	30.6	2.3	406	17	21.2	2.7	407	17
English 10	25.5	2.8	878	35	32.4	2.4	876	35	23.7	2.2	875	35
English 13	25.2	2.8	349	19	30.3	1.8	349	19	26.3	2.8	352	19
French 10 *	26.8	3.0	177	9	33.8	1.8	177	9	21.3	2.2	175	9
Mathematics 10	24.6	2.7	472	18	33.8	2.0	472	18	20.1	2.6	467	18
Mathematics 13	24.6	2.1	318	14	32.4	1.9	318	14	22.5	2.4	314	14
Mathematics 15 *	25.6	2.3	109	7	31.0	2.0	110	7	28.6	1.1	112	7
Physical Education 10	31.3	2.8	586	27	31.1	2.6	583	27	27.8	1.9	586	27
Physics 10	26.5	3.4	218	10	32.1	1.1	219	10	20.2	1.4	219	10
Science 11	25.2	3.6	158	10	27.5	3.0	156	10	26.7	2.7	154	10
Social Studies 10	24.7	3.3	732	31	29.5	2.2	731	31	24.2	2.1	733	31
Typewriting 10	25.2	2.8	312	14	32.9	2.6	308	14	27.0	1.3	310	14

TABLE 116: Provincial Statistics for Grade 10 at YEAR END

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Biology 10	25.6	4.0	583	28	30.1	2.1	581	28	20.5	3.0	578	28
Chemistry 10	24.9	3.4	611	28	29.7	1.9	607	28	21.1	2.5	610	28
English 10	25.6	4.0	1206	56	32.1	2.7	1203	56	23.5	2.7	1201	56
English 13	25.7	3.7	528	33	30.5	2.7	529	33	26.4	2.8	527	33
French 10	26.2	4.1	379	21	32.5	2.7	378	21	21.8	2.3	375	21
Mathematics 10	24.7	3.1	925	40	33.3	2.6	921	40	20.1	2.2	925	40
Mathematics 13	23.8	3.7	517	27	30.9	3.3	517	27	22.4	2.1	518	27
Mathematics 15	22.9	4.3	360	25	30.5	2.5	362	25	26.8	2.6	361	25
Physical Education 10	31.4	3.4	1307	61	30.5	3.1	1299	61	28.4	1.7	1304	61
Physics 10	25.4	3.7	334	16	32.0	2.5	333	16	20.0	2.9	334	16
Science 11	27.3	4.6	403	25	29.2	3.6	405	25	27.8	3.1	406	25
Social Studies 10	23.9	4.4	1517	71	29.0	3.0	1508	71	23.5	3.0	1504	71
Typewriting 10	25.3	3.2	931	44	33.2	2.6	933	44	25.9	2.1	935	44

S.D.=Standard Deviation; NS=Number of Students; NC=Number of Classes

TABLE 117: Provincial Statistics for Grade 11 at FALL

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Biology 20	27.8	4.4	299	13	32.1	1.3	298	13	22.3	2.7	299	13
Chemistry 20	26.3	3.1	309	13	31.3	1.6	309	13	20.4	1.9	307	13
English 20	26.0	2.9	565	23	32.2	2.0	561	23	23.1	2.5	563	23
English 23	26.3	2.6	334	15	31.1	1.6	338	15	26.0	2.0	337	15
French 20 *	26.4	4.3	157	9	33.1	3.1	156	9	22.1	2.3	157	9
Mathematics 20	26.0	2.8	458	18	33.5	2.0	459	18	19.8	2.7	460	18
Mathematics 23	24.9	3.1	377	17	32.0	1.9	375	17	22.2	2.1	376	17
Mathematics 25 *	24.9	2.3	93	6	30.3	2.8	91	6	29.2	1.1	93	6
Physical Education 20	34.1	2.5	391	20	33.0	2.6	391	20	28.6	1.6	390	20
Physics 20 *	23.2	3.4	111	6	30.7	1.8	112	6	19.0	2.1	110	6
Social Studies 20	24.4	3.3	690	26	28.9	2.5	688	26	23.2	1.8	687	26

TABLE 118: Provincial Statistics for Grade 11 at MID-YEAR

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Biology 20	25.7	2.9	368	14	31.3	1.7	365	14	20.7	2.3	366	14
Chemistry 20	25.9	3.6	384	16	30.8	2.0	382	16	21.1	1.8	380	16
English 20	25.5	3.0	641	26	32.8	2.1	642	26	22.6	2.2	640	26
English 23	25.9	2.9	366	17	30.9	1.7	367	17	26.3	2.3	366	17
French 20	27.0	3.1	418	23	34.0	1.8	419	23	22.9	2.4	417	23
Mathematics 20	25.0	2.2	411	15	32.9	1.6	411	15	18.9	2.4	411	15
Mathematics 23	24.9	3.5	310	15	32.0	2.0	309	15	22.2	2.0	311	15
Mathematics 25 *	20.8	1.8	45	3	28.4	1.6	45	3	28.1	1.0	45	3
Physical Education 20	33.4	1.8	397	19	32.9	1.7	395	19	28.0	1.9	393	19
Physics 20 *	28.9	2.5	181	8	33.6	1.3	180	8	20.0	1.9	181	8
Social Studies 20	25.2	4.0	561	23	29.3	3.2	561	23	23.3	2.4	561	23

TABLE 119: Provincial Statistics for Grade 11 at YEAR END

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Biology 20	26.0	4.0	536	29	30.9	2.3	532	29	22.0	3.3	534	29
Chemistry 20	26.5	3.1	731	35	30.8	1.8	727	35	21.3	2.4	727	35
English 20	25.3	3.5	889	38	32.2	2.5	886	38	23.4	1.8	883	38
English 23	26.5	2.9	496	27	31.1	2.1	493	27	26.2	1.7	491	27
French 20	26.3	5.8	168	10	33.4	2.8	169	10	20.7	2.2	170	10
Mathematics 20	25.2	3.6	718	34	32.4	2.5	712	34	19.1	2.0	715	34
Mathematics 23	24.5	3.2	379	21	31.1	2.2	378	21	22.5	2.3	374	21
Mathematics 25 *	23.7	2.9	73	6	32.5	1.4	73	6	24.5	2.4	74	6
Physical Education 20	33.7	2.0	688	34	32.7	1.9	690	34	28.7	1.4	683	34
Physics 20	26.3	3.4	486	25	32.4	2.0	483	25	20.8	2.2	486	25
Social Studies 20	24.3	3.7	999	44	28.6	2.3	999	44	23.2	2.9	993	44

S.D.=Standard Deviation; NS=Number of Students; NC=Number of Classes

TABLE 120: Provincial Statistics for Grade 12 at FALL

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Biology 30	28.3	3.9	494	20	32.7	2.0	494	20	21.0	2.1	493	20
Chemistry 30	27.1	2.5	331	14	31.6	1.9	334	14	20.3	2.3	332	14
English 30	26.1	3.3	542	22	32.5	2.0	542	22	22.8	1.8	540	22
English 33	27.0	1.9	304	15	31.7	1.5	302	15	26.0	1.8	299	15
French 30 *	28.9	2.7	97	5	33.9	0.9	97	5	22.7	2.1	97	5
Mathematics 30	26.1	3.1	418	17	31.9	2.4	417	17	18.1	3.1	418	17
Mathematics 31 *	27.9	1.6	115	5	32.9	1.5	113	5	18.5	1.1	114	5
Mathematics 33	25.5	1.3	217	11	31.6	1.3	218	11	20.7	1.0	219	11
Physical Education 30	35.4	1.9	201	11	34.4	1.9	201	11	29.0	1.2	202	11
Physics 30 *	23.1	3.4	174	8	30.3	3.0	171	8	18.2	1.3	174	8
Social Studies 30	25.4	2.9	426	19	30.6	2.0	423	19	23.0	2.2	427	19

TABLE 121: Provincial Statistics for Grade 12 at MID-YEAR

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Biology 30	26.8	3.2	324	13	32.2	1.8	325	13	19.6	3.1	323	13
Chemistry 30	26.0	2.6	382	15	31.4	2.1	382	15	20.2	1.6	383	15
English 30	26.5	2.7	470	20	32.5	1.7	469	20	22.7	2.1	469	20
English 33 *	26.8	2.7	214	9	30.2	1.7	213	9	26.2	2.1	213	9
French 30	27.4	4.1	287	16	33.3	2.1	287	16	22.4	2.1	287	16
Mathematics 30	26.2	2.1	466	19	32.3	1.5	466	19	18.3	1.8	462	19
Mathematics 31 *	30.1	2.1	74	5	33.4	1.5	74	5	18.0	1.6	74	5
Mathematics 33 *	25.2	2.2	180	8	30.3	1.7	179	8	21.4	1.4	180	8
Physical Education 30 *	32.1	3.1	173	9	31.4	2.1	173	9	29.1	2.0	172	9
Physics 30 *	27.0	4.1	159	7	32.1	2.4	159	7	18.8	1.7	158	7
Social Studies 30	25.6	3.1	425	17	30.7	2.3	425	17	23.8	2.4	422	17

TABLE 122: Provincial Statistics for Grade 12 at YEAR END

	Evaluative				Usefulness				Difficulty			
	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC	Mean	S.D.	NS	NC
Biology 30	28.7	3.6	635	29	33.3	2.2	628	29	20.4	2.4	624	29
Chemistry 30	27.2	2.4	607	28	31.2	2.2	606	28	21.1	2.1	603	28
English 30	26.0	3.1	828	37	32.3	2.0	829	37	23.0	2.1	828	37
English 33	26.5	4.1	432	26	30.7	3.0	429	26	26.4	2.3	433	26
French 30	24.4	3.1	240	14	32.2	2.6	237	14	22.3	2.8	237	14
Mathematics 30	26.4	2.9	668	30	31.2	1.8	664	30	19.6	1.9	668	30
Mathematics 31	27.6	2.5	355	16	32.9	1.6	354	16	19.8	1.8	354	16
Mathematics 33	25.3	2.4	387	17	30.6	2.3	390	17	22.5	1.3	390	17
Physical Education 30	34.9	2.5	362	20	34.1	2.1	362	20	29.2	1.5	361	20
Physics 30	25.7	3.0	469	23	31.5	2.3	468	23	19.3	2.1	467	23
Social Studies 30	26.4	3.8	652	35	30.8	3.0	651	35	23.6	2.7	654	35

S.D.=Standard Deviation; NS=Number of Students; NC=Number of Classes

APPENDIX I

PHOTOCOPY OF AN ARTICLE FROM AJER

The following article appeared in Volume 28 Number 2, 1982, Alberta Journal of Educational Research. Reprinted by permission.

The Alberta Journal of Educational Research *Vol. XXVIII, No. 2, June, 1982, 175-187*

VERNER R. NYBERG
and
S. C. T. CLARKE
The University of Alberta

School Subjects Attitude Scales

The purpose of the project was to develop and validate a semantic differential type instrument for measuring students' attitudes toward school subjects. At the completion of five developmental stages, the instrument comprised 24 bipolar word pairs with three factors or dimensions: evaluation, usefulness, and difficulty. Test-retest reliabilities on the various dimensions for various subjects and grade levels ranged from .61 to .86. Validity studies at the Grades 5 and 8 levels showed that scores on the three dimensions were predictably related to teachers' opinions, students' categorizations of school subjects, type of school, cultural differences, and sex differences.

Recent changes in school curricula have included emphasis on goals which involve the affective domain. The implementation of such goals, and of the teaching methods designed to promote them, could be furthered by instruments for measuring students' attitudes toward school subjects. Such considerations sparked the Alberta Minister's Advisory Committee on Student Achievement to recommend that an instrument be developed for this purpose. This article is based on the detailed report of its development (Nyberg & Clarke, 1979).

Ideally, the instrument should include an optimal admixture of desirable, but to some extent, conflicting features. It should be: (a) readily understood by teachers and students (that is, have face validity), yet not subject to faking; (b) valid and reliable, yet short enough so that several school subjects could be rated in a normal classroom period; (c) if possible, suitable for all school subjects at widely different grade levels; and (d) handscorable.

It seemed likely that an optimum blend of these desired qualities could be obtained by using the semantic differential technique. This inclination was

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In 1966, Dr. Nyberg left a position in testing and research with the Alberta Department of Education to join the staff of the Department of Educational Psychology at the University of Alberta. His field work, many studies, and publications have been largely in the area of measurement.

Dr. Clarke still teaches and works in the Department of Educational Psychology following his retirement in 1977. The two men have recently collaborated in a number of large scale studies.

strongly supported by the need, initially, for structuring the attitude domain with respect to school subjects. No set of preconceived notions about this structure was required. Rather, the study would seek to delineate one through an analysis of the data.

The article by Maguire (1973) served as a guide for the rationale and methodology of this study. In the description of procedures used in this study, it will be seen that care was taken in selecting the scales; a variety of concepts (school subjects) was used, but no students were given an overwhelming task of differentiation; subjects of varying backgrounds were chosen, but no definition of a population for sampling purposes was attempted at this point; a "stringing out" procedure (Maguire, 1973, p. 301-2) was used for converting the data into a matrix; and a factor analysis method with varimax rotations was employed.

Procedures Used

Osgood, Suci, and Tannenbaum (1957) originated the semantic differential technique to study the meaning of concepts. Factor analyses of the correlations among responses usually yield three dimensions: *evaluation* (associated with bipolar adjective pairs such as pleasant-unpleasant), *potency* (associated with pairs such as strong-weak), and *activity* (associated with pairs such as fast-slow). It was anticipated that school-aged children and youths, rating school subjects in the affective area, might also produce results with these or similar factors.

The semantic differential technique has been widely used and has been applied beyond the study of concepts. For the present study, it was decided that a five-point scale would be suitable for children and youth, and that the ratings requested should be "very much, a bit, neither, a bit, very much." The scoring adopted was +2, +1, 0, -1, -2 respectively, with high positive scores signifying a positive attitude. The bipolar pairs of words used should be applicable to school subjects.

The general procedure involved stages of instrument development and modification followed by field trials, with each stage building on the results of the preceding one. Five stages eventuated.

Stage 1

This stage commenced with a search of the literature for bipolar pairs of words, usually adjectives, which might be applied to school subjects. Approximately 100 pairs were found; these were reduced to 53 by eliminating pairs such as warm-cool which did not appear to apply to school subjects. These 53 were then administered on a one-to-one basis to a few students, who were encouraged to talk out loud as they attempted to rate a school subject using either pair. This procedure eliminated seven pairs which were either not deemed at all applicable to school subjects or were not comprehended by the students. The remaining 46 pairs were arbitrarily assigned to two instruments of 23 pairs each.

Stage 2

At this stage there were two major purposes: to reduce the number of bipolar pairs of words, and to ascertain what factors were present in the students' responses. Maximum variability of response would further both purposes. Each instrument was administered to 441 Grade 5 students in 12 classes from 8 schools, and 307 Grade 8 students in 12 classes from 5 schools. Three teachers were chosen and especially engaged for the task of administering the instruments. Each classroom group rated two subjects chosen by the administrator from the standard list (English language, English literature, reading, social studies, science, mathematics, health) or from a longer list of optional subjects such as art, music, and industrial arts. In any given school, only a few options were offered.

Each of the ratings, regardless of grade level and subject rated, was treated as input data for a factor analysis. Three factors emerged after rotation to a varimax solution. The first, labelled *evaluation*, was the strongest, with eleven pairs in the following descending order of loading: bright-dull, exciting-tiresome, lively-listless, like-dislike, pleasant-unpleasant, (nice-awful & dead-alive, tied), (happy-sad, alert-dull & boring-interesting, tied), still-active. The next, labelled *usefulness* included the following seven pairs: important-unimportant, valuable-worthless, necessary-unnecessary, useful-useless, meaningful-meaningless, smart-stupid, bad-good. The third, labelled *difficulty*, included six: easy-hard, hard-soft, clear-confusing, light-heavy, familiar-strange, certain-uncertain.

The three factors named above accounted for 57 percent of the variance on each of the two instruments, and were used in the next stage.

Stage 3

The purposes at this stage were two-fold: to ascertain whether the factors tentatively identified in the preceding stage were stable, and to explore the possibility of using a shorter instrument consisting of only twelve bipolar pairs of words.

The instrument which resulted from Stage 2 was administered by two of the three teachers who administered the first scale. There were 437 students in 12 Grade 5 classrooms from 9 schools and 307 students from 12 Grade 8 classrooms in 6 schools, each of whom rated social studies and one other subject chosen by the administrator. The set of schools and classrooms involved in this stage overlapped but were not identical with the set involved in Stage 2.

In all, 1474 ratings were useable. The three factors identified in Stage 2 remained. Based on the experience so far, minor revisions in the instructions to students were made. For each factor, the order of the bipolar pairs was altered to ensure that the positive end appeared at the right and left of the five-point scale an equal number of times. For each factor, the four word pairs with the highest loading were considered for the 12-pair short form. However, it was decided that the 24-pair longer form should be used for the next stage.

Stage 4

The results so far being sufficiently promising, it was decided to explore reliability and validity. For this purpose, one of the authors (Clarke) administered all of the instruments. Schools with certain known characteristics were carefully chosen. One school, in a large system, was an *academic* school. Parents who desired a distinctly academic emphasis could bring their children from all parts of a large city to this school. Another two schools were chosen because approximately one-third of the students were from a different cultural background. The remaining schools were chosen because proximity would facilitate repeated measures.

In each instance, teachers were asked to identify approximately one-quarter of the students who had the most positive attitudes toward social studies, and approximately one-quarter with the least positive attitudes. About one-third of the students were asked to identify and rate the subject liked most, then the one liked least. Others were similarly asked to identify and rate the most useful and the least useful, while others were asked to do the same for the most difficult and least difficult. Where available, achievement and intelligence test scores were collected.

In two of the schools, one month later, the same students again rated the subjects which were originally rated.

Stage 4 involved 206 Grade 5 students in 9 classrooms from 3 schools, and 351 Grade 8 students in 15 classrooms from 3 schools. None of these schools had been previously involved in Stages 2 and 3.

Reliabilities were calculated for each of the factors: evaluation, usefulness, and difficulty, using results from all subjects rated. In the *evaluation* factor, coefficient alpha at the Grade 5 level based on 823 useable ratings was .956 for the long form (24 bipolar pairs) and .914 for the 12-pair shorter form; for *usefulness* the corresponding figures were .910 and .894, and for *difficulty*, .823 and .801. The corresponding figures for the Grade 8 level based on 1397 useable returns were: for *evaluation*, .961 and .909; for *usefulness*, .914 and .905; and for *difficulty*, .831 and .814. As expected, the shorter form was less reliable.

Test-retest reliabilities were calculated for those students who rated a subject twice at one sitting because it was assigned by the administrator and subsequently was chosen by the student as most-liked/least-liked (or most-useful/least-useful, or most difficult/least difficult). The number of students involved was low in many instances. The clearest results were for science at the Grade 8 level, where 107 students provided a test-retest reliability on the short form of .88 for *evaluation*, .90 for *usefulness*, and .80 for *difficulty*.

Test-retest reliabilities after one month were considerably lower than the figures illustrated above, ranging from a low of .37 on *difficulty* for 89 Grade 5 students rating the subject science (12-pair short form) to a high of .68 on *evaluation* for 119 Grade 8 students rating the subject science (24-pair long form, also 12-pair short form). Fluctuations of attitudes were suspected.

Because the scale was further revised, and results of further calculations of reliability are shown later, additional detail is not provided here.

Although the short form was only marginally less reliable than the long form, it was noted that the long form took only ten or twelve minutes to administer and about half of this time was devoted to handing out forms and to giving instructions. It was therefore decided to abandon the development of a short form.

The validity of the scales was assessed by obtaining evidence from five areas as described below.

Expert opinion was obtained by asking the teacher to identify about one-quarter of the students in a classroom who had the most positive, and another one-quarter who had the least positive attitudes toward social studies. At the Grade 5 level, 52 students identified as having a positive attitude had the following mean scores: *evaluation*, 2.73; *usefulness*, 4.67; and *difficulty*, 1.06. The corresponding scores for the 47 identified as having least positive attitudes were -0.06, 1.17, and -0.81. The differences between the means were all in the expected direction. The differences for *evaluation* and *usefulness* were significant at the $p<.01$ level, and for *difficulty* at the at the $p<.05$ level. For corresponding groups (86 and 76) of Grade 8 students, the differences between the corresponding means were also all in the expected direction and, as before, the first two were significant at the $p<.01$ level and the last one at the $p<.05$ level.

Student ratings agreed with teacher opinion.

Student preferences provided a second basis for comparing mean scores on each factor. In about one-third of the classrooms, each student was asked to select the most liked subject and to rate it, then to select and rate the least liked subject. In other classrooms a similar rating was made of subjects deemed most useful and least useful, and most difficult and least difficult. The wide range of choices available made the numbers very small, so Grade 5 and 8 results were combined regardless of school subject. The mean score on the *evaluation* dimension for 250 Grade 5 and 8 students who selected various school subjects as most liked was 6.44, on *usefulness*, 5.35, and on *difficulty* 3.24. The corresponding scores made by the same students on school subjects selected as least liked were -4.89, -0.17, and -2.65. The largest difference was for the evaluation dimension. Each of the differences was significant at the $p<.01$ level. Similar results were found for the usefulness dimension, where the largest difference between mean scores was for that dimension, and each of the differences was significant at the $p<.01$ level. Similar results were found for the difficulty dimension.

It was clear that students' choices, or statements about subjects, coincided with their ratings of the subjects.

Analysis by type of school provided mean scores from an "academic" school. This school had only one Grade 5 class, composed almost wholly of children from the neighborhood who were not necessarily "academic." However, the three Grade 8 classes were, to a large extent, composed of students conveyed by their parents in order to attend this particular school. Comparing mean scores of students attending this school with those attending the remaining schools would provide a basis for validation. The comparison involved different schools with a small number of teachers who might conceivably use widely different methods of teaching. However, the Grade 8 students in the "academic" school were a select group. Statistics for the Grade 5 group were not computed because of a problem in administration that resulted in a very few students completing science or social studies ratings. Results for the Grade 8 classes are shown in Table 1.

TABLE 1

COMPARISON OF MEAN RATINGS OF GRADE 8 STUDENTS IN AN ACADEMIC SCHOOL WITH THOSE IN OTHER SCHOOLS

School Subject	Dimension	Academic Students			Other Students			Difference Between Means ($\bar{X}_1-\bar{X}_2$)	Level of Sig. of Diff.
		N	$\bar{X}_1$	S	N	$\bar{X}_2$	S		
Science	Evaluation	61	-.33	5.51	284	.67	4.84	-1.00	-
Science	Usefulness	61	3.02	5.10	284	3.11	4.50	- .09	-
Science	Difficulty	61	-1.22	3.93	284	-1.46	3.86	.24	-
Social St.	Evaluation	62	2.76	3.27	285	.23	3.87	2.53	< .01
Social St.	Usefulness	62	4.71	3.62	285	3.41	4.15	1.30	< .01
Social St.	Difficulty	62	.31	2.76	285	-.57	3.37	.89	< .05

It is quite clear from the figures in Table 1 that the selected academic students rated science about the same as unselected students, but that for social studies the academic students recorded more positive attitudes in all three dimensions. These results were difficult to interpret because of confounding variables, such as the fact that the science students were exposed to a different, more rigorous science curriculum. In any case, it was not felt that the results cast any real doubt on the validity of the instrument.

Cultural differences were used as another criterion for studying validity. Students of a distinct subculture were regarded by teachers and administrators as having attitudes toward school subjects which were less favourable than those of students from the main culture. The comparative scores of these groups are presented for the rating of social studies and science in Table 2.

It was observed that at the Grade 5 level only one of the differences between means (usefulness) was significant. All of the differences, except one, were in the hypothesized direction. At the grade 8 level, all of the differences were in the expected direction, and all but one of the six differences were significant at the $p<.01$ level.

TABLE 2

COMPARISON OF MEAN RATINGS BY SUBCULTURE STUDENTS AND MAIN CULTURE STUDENTS FOR SOCIAL STUDIES AND SCIENCE

		Subculture			Main Culture			Difference	Level of Sig. of Diff.
	Dimension	N_1	$\bar{X}_1$	S_1	N_2	$\bar{X}_2$	S_2	$\bar{X}_1 - \bar{X}_2$	
Soc. St. Gr.5									
	Evaluation	43	.66	4.79	164	1.32	4.29	- .66	-
	Usefulness	43	2.23	4.73	164	3.69	4.43	-1.46	-
	Difficulty	43	-.11	3.92	164	.01	3.74	- .12	-
Sci. Gr. 5									
	Evaluation	40	.15	5.57	159	1.24	5.15	-1.09	-
	Usefulness	40	.98	4.70	159	3.03	4.58	-2.05	< .05
	Difficulty	40	1.50	4.45	159	.75	4.27	.75	-
Soc. St. Gr.8									
	Evaluation	75	-1.39	3.62	270	1.27	3.78	-2.66	< .01
	Usefulness	75	2.05	4.47	270	4.06	3.89	-2.01	< .01
	Difficulty	75	- .56	3.73	270	- .13	3.16	- .43	-
Sci. Gr. 8									
	Evaluation	76	-1.49	4.76	268	1.13	4.74	-2.62	< .01
	Usefulness	76	.75	4.75	268	3.75	4.36	-3.00	< .01
	Difficulty	76	-2.93	3.77	268	-1.06	3.80	-1.87	< .01

These results were considered to be in reasonable agreement with expectations. It was thought likely that, as the subculture students progressed through school, social studies in particular, and science would be perceived as having diminishing relevance to the subculture, and that this perception would be reflected in their responses on the instrument. The fact that the results bore out this hypothesis was taken as evidence of validity of the instrument.

Sex differences were examined as another criterion for validity. Of the two subjects compared, social studies and science, teacher and administrator opinion was that girls, expecially older girls, would have less favourable attitudes toward science than would boys.

TABLE 3

COMPARISON OF RATINGS OF MALES AND FEMALES FOR SCIENCE

			Evaluation		Usefulness		Difficulty	
Group	Grade	N	Mean	S.D.	Mean	S.D.	Mean	S.D.
Males	5	97	1.49	5.10	2.49	4.81	.91	3.98
Females	5	105	.55	5.31	2.60	4.57	.80	4.59
Significance of Difference			N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
Males	8	187	1.77	4.23	4.04	3.86	-1.14	3.69
Females	8	158	-.87	5.16	1.97	5.15	-1.87	4.04
Significance of Difference			p < .01	p < .01	p < .01	p <.01	N.S.	N.S.

Table 3 sets forth the results for science. It can be observed that at the Grade 5 level the differences in mean scores for evaluation, usefulness, and difficulty were relatively small, not statistically significant, and not consistently in any direction. However, at the Grade 8 level, two of the three comparisons (for evaluation and for usefulness) demonstrated differences of mean scores in the direction of less favourable attitudes by girls, of a magnitude which was statistically significant at the $p<.01$ level.

The results for social studies, not presented here, revealed for each dimension at each grade level that differences in mean scores were not statistically significant at the $p<.05$ level.

The sex differences found were not great in the lower grades. For older students some differences were found; these were in the expected direction.

It was possible to obtain an estimate of achievement from the final marks for Grade 4 and Grade 7 as awarded in the preceding June. The attitude measures were taken in the following autumn, starting in September. For one school, results of a Lorge Thorndike intelligence test (raw scores) were available for Grade 8 students. The correlations between achievement or mental ability and attitude toward school subjects are presented in Table 4.

TABLE 4

ATTITUDE-ACHIEVEMENT AND ATTITUDE-INTELLIGENCE

Science Attitude Factor	Science Achievement			Intelligence		
	Males	Females	Total	Males	Females	Total
N=	239	266	511	70	60	132
Evaluation	0.010	.050	-.001	.101	-.197	-.052
Usefulness	.117	.161*	.116**	.179	-.119	-.013
Difficulty	-.045	.127*	.048	-.049	-.003	-.029

* $p < .05$

** $p < .01$

Of 18 possible comparisons three were statistically significant, two at the 0.05 level and one at the 0.01 level. It was concluded that for these students, attitudes toward school subjects were relatively independent of either achievement or intelligence.

Finally, a factor analysis involving the Stage 4 data was carried out. All of the data were combined; that is, ratings of all school subjects investigated for both Grades 5 and 8 served as the basis for a single factor analysis. After rotation to the varimax criterion the three factors that resulted were found to be identical to those found in the earlier stages.

Stage 5

During the administration of the measure in Stage 4, Clarke had observed that some students did not know the meanings of some words, usually one of a pair. He had explained the meanings at the time. It was decided that for such words, a simplified and brief definition would be provided. Although the factors previously found had remained intact, the test-retest reliability was not as high as would be desirable, particularly that based on a one-month time lapse. School examinations and report cards had been scheduled during the interval; teachers and administrators expected this might affect students' attitudes toward school subjects. It was decided that further reliability studies should be tried. In this connection, it was decided to lengthen the usefulness and difficulty scales so that each would consist of eight bipolar pairs, and to reduce the evaluation scale, which had the highest reliability, to eight. These procedures would maintain the length of the instrument at the desired 24 bipolar pairs. It was also deemed desirable to try out the scale at the high school (Grade 11) level.

The first task was to revise the scale. Three bipolar pairs of words with the lowest factor loadings were eliminated from the evaluation scale. These were still-active, sad-happy, and alert-dull. Two bipolar pairs of words were added to the usefulness scale (impractical-practical, and harmful-advantageous) while one (smart-stupid) was dropped because of adverse teacher reaction and because it loaded about equally on both the evaluation and usefulness scale. Two bipolar pairs were added to the difficulty scale: complicated-simple, and undemanding-rigorous.

Based on the experience in administering the scale during Stage 4, the instructions to students were revised, particularly by adding additional examples of the rating procedure used. For the five-point rating scale (very much, a bit, neither, a bit, very much) the revised instructions pointed out that the rating "neither" could be used if the student felt that the bipolar pair of words did not apply to the subject being rated, or if it did apply but the rating was midway along the scale.

TABLE 5

RELIABILITY ESTIMATES BASED ON FOUR TESTING OCCASIONS: ATTITUDE TOWARDS MATHEMATICS

		Occasion		
Factor		2	3	4
Evaluation	1	.76	.80	.73
	2		.83	.84
	3			.88
Usefulness	1	.63	.82	.65
	2		.67	.74
	3			.78
Difficulty	1	.63	.86	.70
	2		.75	.85
	3			.80

Occasion code:

1 = day 1, 1st test
2 = day 1, 2nd test (30 min. after 1st test)
3 = day 2, 1st test (1 week after day 1)
4 = day 2, 2nd test (30 min. after 1st test)

correlations between occasions 1 and 2, and 3 and 4 are estimates of reliability that are not subject to trait unreliability. The correlation between occasion 1 and 3 appears alone in Table 3.

The revised instrument was again administered by Clarke in seven schools. In four of the schools, one week later the measure was again administered to the same students for the same subjects. At the Grade 11 level, in one large school, the school subjects rated were Mathematics, Social Studies, Science, Language, Literature, Physical Education, then Mathematics again, all at one sitting. This was possible because of the traditionally longer class period in the high school. In this school, one week later, the same students again rated the same subjects.

The test-retest reliability, based on a 30-minute and on a one-week time lapse for 191 Grade 11 students rating the school subject mathematics is shown in Table 5.

Thus, for the school subject mathematics, the test-retest reliability for the evaluation factor with a 30-minute time lapse was 0.76 and 0.88. There were four possible estimates of the test-retest reliability after a one-week time lapse: day 1 first test vs. day 2 first test, day 1 first test vs. day 2 second test, day 1 second test vs. day 2 first test, and day 1 second test vs. day 2 second test. These were found to be 0.80, 0.73, 0.83, and 0.84 respectively. With a 30-minute interval, the estimate of reliability should not be subject to trait unreliability.

TABLE 6

TEST-RETEST RELIABILITY BASED ON A ONE-WEEK TIME LAPSE

			Reliability	
Subject	Scale	Gr. 5 (N = 85)	Gr. 8 (N = 292)	Gr. 11 (N = 191)
Social Studies	Evaluation	.64	.75	.74
	Usefulness	.63	.67	.67
	Difficulty	.61	.76	.71
Science	Evaluation	.73	.75	.79
	Usefulness	.65	.70	.72
	Difficulty	.73	.70	.78
Phys. Ed.	Evaluation	.67	.76	.77
	Usefulness	.78	.68	.74
	Difficulty	.78	.70	.72
Mathematics	Evaluation	.75	.80	.80
	Usefulness	.75	.79	.82
	Difficulty	.76	.81	.86
English Lang.	Evaluation			.69
	Usefulness			.71
	Difficulty			.73
English Lit.	Evaluation			.70
	Usefulness			.72
	Difficulty			.70
All Subjects	Evaluation	.72	.79	.84
	Usefulness	.82	.77	.84
	Difficulty	.79	.77	.82

Test-retest reliabilities based on a one-week time for Grades 5, 8 and 11 for a number of school subjects are shown in Table 6. It will be noted that in general, these reliabilities range from 0.65 to 0.85 for the various subjects and dimensions. In general, the reliabilities are highest for Grade 11 students and lowest for Grade 5 students. The persisting vocabulary difficulty may account in part for this finding.

Each scale had been altered somewhat so another factor analysis was performed to determine whether the original factors remained intact. Table 7 shows the results.

TABLE 7

VARIMAX ROTATED FACTOR LOADINGS BY GRADE

		Evaluation			Usefulness			Difficulty		
		5	8	11	5	8	11	5	8	11
+	nice-awful	.72	.73	.77						
-	boring-interesting	.73	.77	.80						
-	unpleasant-pleasant	.69	.71	.80						
-	dislike-like	.72	.71	.78						
+	bright-dull	.75	.78	.83						
-	dead-alive	.75	.79	.82						
+	lively-listless	.68	.76	.78						
+	exciting-tiresome	.67	.72	.73						
-	useless-useful				.66	.75	.78			
+	important-unimportant				.63	.83	.85			
-	impractical-practical				.65	.78	.82			
-	worthless-valuable				.71	.84	.87			
+	helpful-unhelpful				.65	.82	.85			
-	unnecessary-necessary				.74	.85	.84			
-	harmful-advantageous				.55	.67	.72			
+	meaningful-meaningless				.64	.72	.75			
-	hard-easy							.64	.72	.74
+	light-heavy							.61	.60	.72
+	clear-confusing							.65	.70	.72
-	complicated-simple							.66	.78	.82
+	elementary-advanced							.72	.45	.59
-	strange-familiar							.45	.55	.57
+	understandable-puzzling							.58	.65	.67
+	undemanding-rigorous							.27	.41	.55

Percentage variance accounted for:
Grade 5 - 53%
Grade 8 - 63%
Grade 11- 68%

It can be observed that the factors remained intact, the loadings were similar for all three grades and were consistent, that is, each of the word pairs had its highest loading on the same three factors for all three grades. One of the loadings for Grade 5 was low (.27) but the bipolar word pair was retained because the loadings for Grade 8 and 11 were satisfactory, and because it was hard to find good pairs for the difficulty factor.

Table 7 presents the bipolar pairs of words in their final form for each of the three factors. Also included is the scoring key on the +2, +1, 0, -1, -2 scale. Thus, a student rating of a subject as "very much" nice would be assigned a score of +2. If a student rated a subject "a bit" boring it would score -1, and so on.

The words which were defined, with the simplified definition, were as follows:

listless (inactive, lazy)
tiresome (makes a person feel tired)
advantageous (brings good or gain)
heavy (a lot of work)
confusing (mixes a person up)
advanced (beyond the beginning level)
puzzling (hard to understand)
rigorous (has to be exactly right).

Discussion

The School Subjects Attitude Scales is a reliable and valid instrument for measuring attitudes toward school subjects. Reliability varies by subject, being higher for mathematics and science than for social studies and English. It varies by grade, being higher for the higher grades. It varies by dimension, but with no clearly discernible pattern. In general, the reliabilities found for each dimension ranged from 0.65 to 0.85.

Validity was determined prior to the final revision of the scale. However, since it was ascertained that the factors remained unchanged and the reliability for each increased, it was assumed that the findings would apply to the final revision. For each criterion used (expert opinion, student preferences, type of school, cultural differences, and sex differences) student ratings were in the expected direction and differences were frequently of considerable magnitude. At the Grade 5 level, cultural differences and sex differences were small, and for social studies, sex differences were small.

Experience in administering the scale supports the view that faking is a real problem. Measures such as anonymity of results, administration by a neutral person, and assurances that results cannot and will not reflect in any way on the student, may reduce faking.

Three dimensions which appeared to be very stable were found in students' attitude toward school subjects. They were identified as *evaluation* (e.g., boring-interesting), *usefulness* (e.g., worthless-valuable) and *difficulty* (e.g., complicated-simple).

The semantic differential type instrument developed had the versatility desired, but was hampered somewhat by the difficulty in finding bipolar pairs of words which could be easily comprehended by students, particularly those in lower grades. Despite this, however, the instrument seems to be of potential use in grades as low as the fifth.

The instrument in its present form might be useful to teachers and to school systems. However, a few limitations should be borne in mind if use is contemplated. First, it is important to note that in the developmental stages of the instrument the administrator was perceived by the students to be an outsider who could legitimately claim to have no power over the students and who stated that individual responses would be scored by a machine and not revealed to anyone. A second limitation is that no norms have yet been developed, therefore the instrument can be used to make local comparisons only.

Further development of the School Subjects Attitudes Scales will likely be undertaken. The major task will be the construction of norms. It is expected that separate norms will be needed for different subjects, different grades, for boys and girls, and perhaps for different types of schools. In addition, separate norms for time of year may be required, e.g., September, December, February, and May. (As this article goes to press, the authors report that they have commenced work on developing norms for Alberta.)

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APPENDIX II

LIST OF HIGH SCHOOL COURSES

With Course Codes

Course Code	Course Name	Course Code	Course Name
1230	Biology 10	2200	Mathematics 20
2230	Biology 20	2216	Mathematics 23
3230	Biology 30	2225	Mathematics 25
1240	Chemistry 10	3200	Mathematics 30
2240	Chemistry 20	3211	Mathematics 31
3240	Chemistry 30	3216	Mathematics 33
1100	English 10	1445	Physical Education 10
1115	English 13	2445	Physical Education 20
2100	English 20	3445	Physical Education 30
2115	English 23	1260	Physics 10
3100	English 30	2260	Physics 20
3115	English 33	3260	Physics 30
1300	French 10	1280	Science 11
2300	French 20	1150	Social Studies 10
3300	French 30	2150	Social Studies 20
1200	Mathematics 10	3150	Social Studies 30
1216	Mathematics 13	1565	Typewriting 10
1225	Mathematics 15		

APPENDIX III

RELIABILITY ESTIMATES OF A SAMPLE OF SUBJECTS*

Subject	No. Classes	Alpha Coefficients Evaluative	 Usefulness	 Difficulty
Math 10	40	.97	.97	.90
Guidance 9	92	.99	.99	.90
Phys. Ed. 10	61	.97	.98	.73
Biology 10	28	.98	.96	.91
Chemistry 10	28	.98	.94	.92
Typewriting 10	27	.97	.97	.85
Spelling, Gd.5	113	.97	.95	.84
Music, Gd.5	111	.99	.98	.92
Health, Gd.5	83	.98	.97	.93
Art, Gd.5	109	.99	.96	.84
Phys. Ed., Gd.5	114	.97	.94	.86
Reading, Gd.5	106	.95	.92	.82
Soc. St., Gd.5	62	.97	.95	.84
Lang., Gd.5	116	.96	.95	.83
Math, Gd.5	118	.97	.95	.84
Science, Gd.5	112	.99	.97	.88

* Reliability estimates were computed for the data on two of the thirty-five tapes. A tape containing Grade 5 data was deliberately chosen, because coefficients tended to be lower for this grade in the validity studies. A Grade 10 tape was selected to represent high school grades. Both tapes happened to contain end-of-year data.

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